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THOMAS BULKOWSKI

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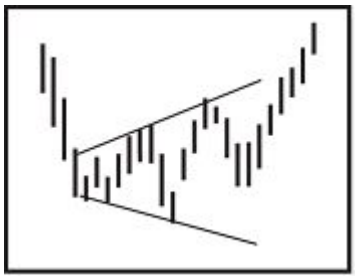
Encyclopedia of Chart Patterns

THIRD EDITION



Thomas Bulkowski

WILEY

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To my parents,
who continued to love me even after my homemade rocket set the lawn on fire, and to my four-legged best friend,

Rusty,
who saved my life; it grieves me that I couldn't save yours.

Titles by Thomas Bulkowski

Chart Patterns after the Buy

Describes key elements involved in making chart patterns work so you can profit after you buy. It provides a number of scenarios to compare against your current situation to see if your selection will outperform.

Encyclopedia of Candlestick Charts

The only candlestick book that statistically tests 103 candle patterns and reports on performance in a clear and concise manner.

Encyclopedia of Chart Patterns

A popular reference book that takes apart 75 chart patterns, tests them, and describes how they behave.

Fundamental Analysis and Position Trading: Evolution of a Trader

Describes how value investing can improve your wealth. It tests fundamentals such as the price-to-earnings ratio, book value, debt levels, and so on. Do they work?

Getting Started in Chart Patterns

A popular, low-cost choice for people wishing to become familiar with chart patterns and how to trade using them.

Swing and Day Trading: Evolution of a Trader

A how-to book that explains swing and day trading using chart patterns.

Trading Basics: Evolution of a Trader

Covers the basics of trading and investing, like position sizing, scaling in and out of positions, leverage, and so on, and then tests them to see which work best.

Trading Classic Chart Patterns

Presents a chart pattern scoring system to select patterns that outperform.

Visual Guide to Chart Patterns

An entry-level guide to chart patterns, in color, including buy and sell signals, quizzes, and more.

Preface to the Third Edition

I receive a lot of emails from people wanting to know the fastest way to lose money. They don't phrase it like that, of course. “I want to trade Forex full time,” using massive leverage. “I need to make money because I quit my job, I have $10 in trading capital, and I'm in debt up to my eyeballs. Can you help?”

One trader, let me call her Lisa, found success using this book. In just over a year, she made $5 million. On paper. Then she used real money, funded in part by help from her parents.

What happened?

Lisa made over a thousand percent and bought her dad a boat.

Can I adopt her?

For some, like Lisa, this book is a shortcut to making money. I've done the heavy lifting by researching and cataloging chart patterns for more than two decades. I packaged that research and experience into this book. It's a thick book. It's an expensive book. And it's worth every cent as Lisa found out.

All of my books sell well because I do one thing which few authors do: I prove what I write. I don't just copy the ideas of others who copied them from someone else. My books break new ground. I'm the person others are stealing their ideas from. You'll find my ideas between the covers of this book in easy-to-understand language. There, I share performance details on 75 chart patterns. Some patterns work. Some are best left untouched. And some that don't work turn into money makers when they bust their downward breakouts.

This Book

This book has information that will give you an edge to put you ahead of other traders. But information is only one ingredient to success. You have to understand how to use it.

In the Glossary near the back of this book, I have listed the Results Snapshot followed by nine statistics tables, the same ones used in most chapters. There, I explain each table entry. If you're ever confused about the meaning of a table entry or how I measured performance, then check the Glossary.

Following the Glossary is terminology. It explains important terms used in this book.

There's also a Visual Index of chart patterns hidden back there. If you can't make sense of the squiggles on your price chart, then maybe the visual index can help identify the pattern.

This book is a reference tool, not a novel where you discover the butler did it, and it's not a book you'll want to read from cover to cover. I tried to lighten up the prose in this edition. You may find my humor misses the mark. At least I woke you up.

What's New?

Maybe you already own the first or second edition. Why buy the book again? The first edition was like owning a horse. The second edition was like owning a model T. This edition is like owning the DeLorean time machine from the movie *Back to the Future*.

- I added chapters covering **23 new chart patterns**.
- Additional samples. This edition reports on **150,000** samples, ten times the first edition (15,000) and almost four times the second edition (38,500).
- **New tables.** All tables are still easy to understand. The new tables are:

  How often stops hit (provides guidance for placing stop loss orders)

  Performance and failures over time (do chart patterns work as well today as they did 30 years ago?)

  Busted patterns (can you make more money trading failed patterns?)

  Special features (shows statistics unique to some chart patterns)
- **Experience** section. If I have traded a chart pattern, I discuss my experience with it, including lessons learned.
- **Easy to use.** Bold table references (example: **Table 34.1**), chart references (example: **Figure 27.5**), and descriptive table entries (example: **Days to ultimate high)** help make finding your place in the text and locating the discussion for a table entry or figure easier.

About the Statistics

With four times as many samples as in the second edition, and with performance drifting over the 15 years since I updated this book, many statistics will have changed, sometimes substantially.

Don't be alarmed.

The statistics in this book allow you to compare the performance of one chart pattern to another (which I make easy in the Statistics Summary at the back of the book). The performance results are *not* meant to suggest you can make 55% trading bump-and-run reversal bottoms (the best performing chart pattern with an average rise of 55%). You *can* make 55%, but only if you trade the chart pattern perfectly, and do so 1,099 times. Is that going to happen?

No.

You can do better.

If you're serious about trading the stock market, or investing for the long haul, this book might be the answer to your dreams. And if not, then each night read one of the Sample Trades to your children as a bedtime story. Most won't give them nightmares, and they are too young to care anyway.

But they might grow up to be traders like Lisa who'll buy you a boat.

THOMAS N. BULKOWSKI
January 2021

Preface to the Second Edition

On 24 March 2000, the financial world changed. No, that was not the date this book first hit the store shelves, but the beginning of a bear market that lasted 2.5 years. Finally, I had bear market data to use for finding chart patterns!

After spending nearly 5 years recovering from the work needed to complete the first edition, I decided to undertake an update. I changed the editorial content of the book in small ways, but made substantial improvements in others. Here is the list of the important changes:

- Bull and bear market statistics for complete coverage.
- Expanded statistics, all in a similar format:

  Results Snapshot, at the start of each chapter, shows the most important numbers and surprises.

  General statistics, including the average rise or decline, busted pattern performance, and benchmark performance.

  Failure rates, a list of ten breakpoints to show how often a pattern fails.

  Breakout and post-breakout statistics, showing performance over the yearly price range, pullback rates, and performance after a gap.

  Frequency distribution of days to the ultimate high or low, showing when the trend is likely to end.

  Size statistics, describing how performance varies for pattern height, width, and combinations of both.

  Volume statistics, including volume trend, a new concept I call *volume shapes,* and breakout day volume.

  For best performance, a list of trading tips and where to find them in each chapter.
- More chart patterns. I added 14 new chart patterns.

- Event patterns. I added 9 new types of patterns, which I call event patterns. These include earnings surprises, drug approvals, store sales, and stock upgrades and downgrades.
- More samples. I found over 38,500 chart pattern samples, more than double the 15,000 used in the first edition.
- Keyed table entries. Each table entry appears in bold at the start of its corresponding text discussion for easy locating.
- Glossary and methodology. Instead of peppering the text with repeated explanations, a new chapter explains how I arrived at each table entry.

Thanks to the thousands who purchased the first edition. I am confident that this second edition will help you become a more knowledgeable and successful trader.

THOMAS N. BULKOWSKI
January 2005

Preface to the First Edition

When I was a little tyke, I decided the easiest way to riches was to play the stock market. It was, after all, a level playing field, a negative-sum game with somebody winning and somebody losing. (*Hint:* The winner is always the broker.) All one had to do to win was pick stocks that went up and avoid stocks that went down. Easy.

I kept this in mind when I graduated from Syracuse University with an engineering degree and showed up early for my first professional job. Each morning I cracked open the newspaper and plotted my stock picks on a piece of graph paper taped to the wall. Bob, my office mate, used the same newspaper to select his stocks. I chose my selections after exhausting fundamental research, but Bob simply closed his eyes, twirled his hand around, and plunged his finger into the newspaper. When he opened his eyes and removed his finger, he announced another pick.

After several months of tracking both our selections, I made a startling discovery: I was getting creamed. Bob's random selections were beating the tar out of my carefully researched choices. I also discovered something else: I was learning a lot by paper trading.

With the hesitancy and distrust inherited from my parents, I studied two dozen firms before making my final selection and first purchase: I opened a money market account. The timing was excellent; I was earning over 17% on my cash. At first glance, the return might imply a very risky investment, but it was not. The prime rate was, after all, at 21%.

Flush with success, I gathered my courage and opened a brokerage account and began investing the few pennies I saved. Again, the timing was excellent as I caught the beginning of a major bull market. I bought a stock at a split-adjusted price of 88 cents and watched it go to $30 and change.

Lest you think that everything was easy, consider what happened. My stock portfolio was growing by leaps and bounds, but my professional career was about to take a turn for the worse. After switching careers more often than I sometimes like to admit, I landed a job with a company I could finally call home—a job that

would last a lifetime, or so I hoped. Almost 6 months *after* my 10-year anniversary with the company, I received a letter from the chairman. He congratulated me on my decade with the company and looked forward to even more success for me in the coming years.

Six weeks later I was laid off.

The Missing Million

I took stock of the situation and decided that, at the age of 36, I had enough. Newspapers term guys like me *The Missing Million*. We are the ones who, for whatever reason, leave their jobs and decide not to go back into the workforce. We retire. Everyone, and I mean *everyone* (with the notable exception of my cousin Mary Ann—bless her heart), thinks we are nuts.

They're right, of course!

For the longest time, I have been fascinated with technical analysis of stocks. In the early years, I considered the little squiggles to be nothing short of voodoo. Still, I was curious as to why the major brokerage houses were hiring technical analysts in droves. But I did not dare take my eye off the fundamentals simply because I did not know anything about the technicals.

Then I discovered *Technical Analysis of Stocks and Commodities* magazine. During my lunch hour, I would take the elevator down to the library and read back issues. Although I saw chart patterns in the stocks I bought, I never really attached much significance to them. As some of my selections went sour, I began to view chart patterns with more respect. The fundamentals always looked good, but the technicals were signaling a trend change just as I was about to pull the trigger. The stocks I bought either lost money outright or I sold them too soon and cut my profits short.

Perhaps this has happened to you. You do fundamental research on a stock and then buy it, only to watch it go nowhere for a year or more. Even worse, once you get in, the stock tumbles. Had you looked at the chart the answer was always there. Prices pierced a trend line, a head-and-shoulders top appeared out of nowhere, the relative strength index signaled an overbought situation. In short, any number of technical indicators were screaming that a buy now would cost you your shirt. But you never saw the signs.

You are not alone; I did the same thing for years. I eventually got so frustrated with the performance of my stock selections that I decided to do my own research on technical analysis. I went to the library and read the same thing in many books: A head-and-shoulders formation works *most of the time*. What does that mean? Does it mean they are

successful 51% of the time or 90% of the time? No one had the answer. I was not willing to risk my hard-earned dollars on simple bromides. As an engineer I wanted hard, cold facts, not fuzzy platitudes. So, I wrote this book.

Book Layout

At the back of the book is an Index of Chart Patterns. If you suspect your stock is making a chart pattern but do not know what to call it, the Index of Chart Patterns is the first place to look. Page numbers beside each pattern direct you to the associated chapter.

The chapters are arranged alphabetically in two sections: chart patterns and event patterns. Within each chapter, you are first greeted with a "Results Snapshot" of the major findings followed by a short discussion. Then, a "Tour" invites you to explore the chart pattern. "Identification Guidelines," in both table form and in-depth discussion, make selecting and verifying your choices easier.

No work would be complete without an exploration of the mistakes, and the "Focus on Failures" section dissects the cause of failures. The all-important "Statistics" section follows. How do you trade a chart pattern? That is what the "Trading Tactics" and "Sample Trade" sections explore. The "For Best Performance" section includes a list of tips and observations on how to select better performing patterns.

If you have ever worked on a car or done some woodworking, then you will recognize the importance of selecting the right tool for the job. You would not want to use a flat-head screwdriver when a Phillips works better. Both do the job, but they are hardly interchangeable. Sometimes it is not a screwdriver you should be using, but a chisel. Selecting the proper tools and knowing how to use them is half the battle. This book is a lot like that, helping to sort the wheat from the chaff. Sometimes a chart pattern is frightening enough that you will want to take profits. At other times, the best trade that you can make is none at all.

I cannot give you the experience needed to make money in the stock market using chart patterns. I can only give you the tools and say, "Go to work on paper first." That is the first step in developing a trading style that works for you, one you are comfortable with, one that improves as you do. If you review your paper trades, you will understand why a stop-loss order is more than a tool for the professionals. You will improve your ability to predict support and resistance levels that will, in turn, allow you to tighten your stops and get out near the top, cut your losses short, and let your profits run.

You will understand why the statistics in this book are useful for comparison purposes, but your trading results may fall short. You may discover that your girlfriend loves diamonds, but as a chart pattern, they are a lousy investment. One word says it all. Experience.

Good luck.

Thomas N. Bulkowski
December 1999

Acknowledgments

Perhaps several times in your life, something occurs that alters its direction. That happened to me several years ago when I brashly submitted my first article to *Technical Analysis of Stocks and Commodities*. Much to my surprise and delight, the editor at the time, Thom Hartle, published the work. That single event sent me spinning off in a new direction, another career.

Nearly a dozen articles later, I called Thom and chatted with him about an idea for a book. He steered me to Pamela van Giessen at John Wiley & Sons, Inc., publisher of this book. A single e-mail of my idea to her put a new set of wheels in motion. Simple words cannot express my thanks to these two outstanding individuals.

This is a great book made better by the tireless efforts of Bernice Pettinato of Beehive Production Services. She did more than shepherd a 2,000-page manuscript through production. She read it and edited it without dying of boredom while making astute suggestions. Simply, she's the best. Thanks, Bernice.

T. N. B.

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Jim is struggling.

He is the owner of JCB Superstores, and his competitor across town is beating him up; there is blood all over Jim's ledger. He decides it is time to take off the gloves: JCB goes public. He uses the money from the initial public offering to buy his competitor and add a few more stores around town.

With a growing sales base, Jim's clout allows him to negotiate lower prices for the office supplies he sells. He passes on part of the savings to his customers, while watching his margins widen, and plows the profits back into building more stores and updating existing ones.

Jim calls his friend, Tom, and tells him of his plans to expand the operation statewide. They chat for a while and exchange business tactics on how best to manage the expansion. When Tom gets off the phone, he decides to conduct his own research on JCB. He visits several stores and sees the same thing: packed parking lots, people pushing full shopping carts, and lines at the checkout counters.

He questions a few customers to get a sense of the demographics. At a few stores, he even chats with suppliers as they unload their wares. Back at the office, he does a thorough analysis of the financials and looks at the competition. Everything checks out, so he orders his trading partners to buy the stock at no higher than $10 a share.

When news of the expansion plan hits the wires, the Street panics. It is, after all, a soft economy, and expanding willy-nilly when a recession looms is daft, maybe even criminal, according to some news outlets. The stock drops below 10 and Tom's crew makes its move. They buy as much as they can without raising suspicion. The stock rises anyway. It goes back up to 11, then 12, and rounds over at 13 before heading back down.

Several months go by, and the economic outlook is as bleak as ever. The stock eases down below 10. After Tom checks in with Jim for the latest public news, Tom's team buys more. It is an easy score because investors are willing to dump the stock, especially as year-end tax selling approaches.

Six weeks later the company releases the sales numbers for JCB; they are better than expected. The stock rises 15% in minutes and closes at 10.75. And that is just for starters. Six months later, it's clear the economy was never in danger of entering a recession and everyone sees boom times ahead.

The stock hits 20.

Years go by, the stock splits a few times, and the holiday season looms. Tom interviews a handful of customers leaving JCB Superstores and discovers that they are all complaining about the same thing: The advertised goods are not on the shelves.

Tom investigates further and discovers a massive distribution problem, right at the height of the selling season. JCB has overextended itself; the infrastructure is simply not there to support the addition of one new store each week.

Tom realizes it is time to sell. He tells his trading department to dump the stock immediately but for no less than 28.25. They liquidate about a third of their holdings before driving the stock down below the minimum.

Since it is the holidays, everyone seems to be in a buying mood. Novice investors jump in at what they consider a bargain price. The major brokerage houses climb aboard and tout the stock, but Tom knows better. When the stock recovers to its old high, his trading partners sell the remainder of their holdings. The stock tops out and rounds over. During the next month and a half, the stock drifts down, slowly, casually. There is no rush for the exits—just a slow trickle as the smart money quietly folds up shop and moves on.

Then news of poor holiday sales leaks out. There is a rumor about distribution problems, merchandising mistakes, and cash flow problems. Brokerage firms that only weeks before were touting the stock now advise their clients to sell. The stock plummets 39% overnight.

One or two analysts say the stock is oversold; it is a bargain and investors should add to their positions. Many bottom fishers follow their brokers' advice and buy the stock. Big mistake. The buying enthusiasm pushes the price up briefly before a new round of selling takes hold. Each day the stock drops a bit lower, nibbling away like

waves washing against a castle of sand. In 2 months' time, the stock is down another 30%.

The following quarter JCB Superstores announces that earnings will likely come in well below consensus estimates. The stock drops another 15%. The company is trying to correct the distribution problem, but it is not something easily fixed. It decides to stop expanding and to concentrate on the profitability of its existing store base.

Two years later, Tom pulls up the stock chart. The dog has been flat for so long it looks as if its heartbeat has stopped. He calls Jim and chats about the outlook for JCB Superstores. Jim gushes enthusiastically about a new retailing concept called the Internet. He is excited about the opportunity to sell office supplies online without the need for bricks and mortar. There is some risk because the online community is in its infancy, but Jim predicts demand will expand quickly. Tom is impressed, so he starts doing his homework and is soon buying the stock again.

Investment Footprints

If you picture in your mind the price action of JCB Superstores, you may recognize three chart patterns: a double bottom, a double top, and a dead-cat bounce. To knowledgeable investors, chart patterns are not squiggles on a price chart; they are the footprints left by the smart money. The footprints are all they need to follow as they line their pockets with greater and greater riches.

To others, such as Tom, it takes hard work and pavement pounding before they dare take a position in a stock. They are the ones *making* the footprints. They are the smart money that is setting the rules of the game—a game anyone can play. It is called investing.

Whether you choose to use technical analysis or fundamental analysis in your trading decisions, it pays to know what the market is thinking. It pays to look for the footprints. Those footprints may well steer you away from a cliff and get you out of a stock just in time. The feet that make those footprints are the same ones that will kick you in the pants, waking you up to a promising investment opportunity.

This book gives you the tools to spot the footprints, where they predict the stock is heading, how far it will travel, and how reliable the trail really is. The tools will not make you rich; tools rarely do. But they are instruments to greater wealth. Use them wisely.

The Database

Let me tell you about the stocks I used to compile the statistics in this book.

- 1,396 stocks were used; most start in July 1991 and extend into 2020.
- Not all stocks covered the entire period.
- Some stocks no longer trade. It's important to include what happens when a company goes bankrupt or merged out of existence.
- All stocks use daily price data, not intraday, but some chapters use weekly or monthly data.
- *Most* chart patterns were added in real time as new data arrives each day. This avoids look-ahead bias (where I only catalog patterns I can see have done well).
- The real-time addition of data was done for more than 20 years.
- All stocks have been split adjusted unless I no longer actively follow them.
- When a new stock is added to the database, it may have been dividend adjusted by the data provider. However, I don't adjust stocks I use in my database for dividends.
- A stock becomes part of the database provided it trades above $5 a share (usually), isn't thinly traded (I like to see daily volume over 100,000 shares), and the stock has a heartbeat (meaning it has a reasonable high–low yearly trading range).
- Market capitalization varies with all three represented (small, medium, and large).
- Most stocks chosen are from American companies whose stocks trade on the NYSE or NASDAQ exchanges.

The Sample Trade

Most of the sample trades included in the chapters of this book are fictitious. Each sample trade uses techniques I wanted to illustrate, incorporating fictitious people in sometimes unusual circumstances. Call it poetic license, but I hope they give you some ideas on how to increase your profits or minimize your losses. Maybe you'll find them entertaining, too.

Testing Chart Patterns

How do you test chart patterns? It's not an easy question to answer. If you use commonly available software that tests trading strategies, you'll enter rules to model the shape of a double bottom, for example. When price closes above the top of the pattern, it signals an entry, so the software simulates a buy.

What about the exit signal? When do you sell? Should you use a stop-loss order or a signal from MACD or even a moving average crossover? No. Why not? Because you're not testing the chart pattern. You're testing how well a stop-loss order works or you're testing MACD or the moving average crossover system.

So I invented two tools I call the ultimate high and ultimate low to solve the testing problem.

Let's look at a chart so I can explain how these work and you'll understand the statistics in this book. **Figure I.1** shows two chart patterns, a double bottom and a head-and-shoulders top. Let's take the double bottom first.

Trading the Double Bottom

It appears at AB, two valleys that bottom near the same price. A buy signal occurs when price *closes* above the top of the pattern. The top of the pattern is at C and the entry signal (breakout) happens at D when price closes above the top of the double bottom. Entry is made the next day using the opening price, which is 17.06.

Let's say you're using traditional software and place a stop-loss order a penny below the low price of B, which is 15.70.

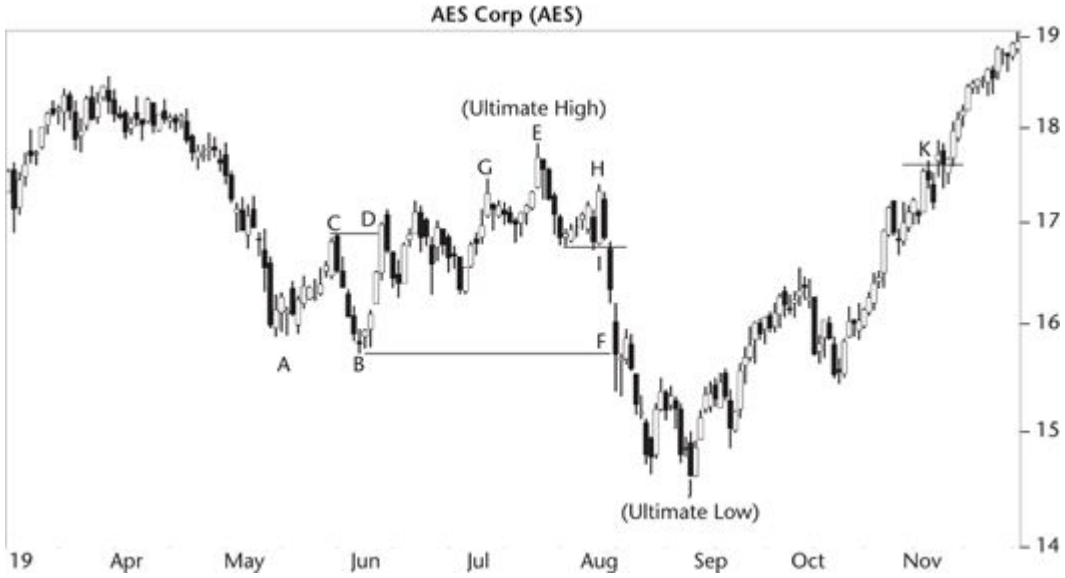


Figure I.1 A double bottom signals a trade entry at D and an exit at the ultimate high. A head-and-shoulders top signals an entry at I and an exit at the ultimate low.

The computer watches the stock rise to E and then drop. When it touches the stop-loss order at 15.70, which happens at F, it closes out the trade. So this trade entered at 17.06, sold at 15.70, and took a loss of $1.36 a share.

Does this mean the double bottom lost $1.36 a share? No. It means the stop-loss order lost that much. You tested the stop-loss order, not the double bottom.

What do I mean?

Pretend that when price climbed to E, you raised the stop-loss order to 17.43 (which is the high price of G). When price dropped to 17.43, the stock sold and it handed you a gain this time of 37 cents a share. Did the double bottom make a profit? No. The stop-loss order did.

As you move the stop-loss order around, you get different sell prices. You're not testing the double bottom. You're testing how well the stop-loss order works at different values. So we haven't answered the basic question, “how do you test chart patterns?”

Given the same entry signal (17.06), let's say you traded this stock perfectly. Where would you sell? When price slides below F, you'll be taking a loss if you have to sell, so trying to shoot for 19 on the upper

right of the chart isn't optimum. The trade goes negative for a while before it shows a profit.

Ultimate High

How about selling at E, when price peaks? That would give you the most profit before the stock dropped into loss territory. That peak is what I call the ultimate high. If you traded this stock perfectly, you'd buy at 17.06, using the opening price the day after an upward breakout, and you'd sell at the high price at E.

I'm not testing how well a stop-loss order works because I'm not using a stop or MACD or a moving average crossover system to find the exit. I'm selling at the highest possible price before things go wrong. I'm selling at the ultimate high. A perfect double bottom trade.

How do I automate this? In my software, I use two rules to find the ultimate high (on a historical price chart, not real time).

1. Find the highest high before price drops 20%, measured from the high to the close.
2. If price closes below the bottom of the chart pattern, then the search for the ultimate high stops, and we use the highest high found after entering the trade.

In this example, the stock drops to F and closes at 15.70. The low at B is 15.71, so price has closed below the bottom of the pattern at F. We use rule 2 to find the ultimate high: The highest high between the entry price (17.06) and F (the bottom of the pattern) is E. E is the ultimate high.

Let's pretend the double bottom is much lower so I can tell you how rule 1 works. Let's also assume that the close at J is at 13.

Rule 1 says to look for the highest high before price drops 20%, measured from the high to the close. The high between the buy price and J is E, at 17.80. So we look for price to close 20% below this, or 14.24. When price *closes* at or below 14.24 (again, assuming this happens at J, at 13), we've found the ultimate high, which is E, at

17.80. So we bought at 17.06 and sold at 17.80 and made a profit of 74 cents a share.

We didn't use a stop-loss order. We didn't use MACD or the moving average crossover. We executed a *perfect trade* by buying exactly when we should have and selling at the ultimate high. We tested how well the double bottom worked *if you traded it perfectly*.

And that's how I measured how bullish chart patterns work.

Years ago, someone asked me if this was the same as placing a trailing stop-loss order 20% below the high price. It's not. If you did that, you'd be stopped out at J (the fictitious one at 13) and not E.

Incidentally, the 20% value in rule 1 comes from the idea of bull and bear markets. A decline of 20% from a high in the market averages means it slid into a bear market. A rise of 20% off a market low means it entered bull market territory. I applied that idea to individual stocks when searching for the ultimate high and low.

Ultimate Low

Finding the ultimate low for bearish chart patterns works similarly. Let's take the example of the head-and-shoulders top at GEH. We see the left shoulder at G, the head at E, and the right shoulder at H. Price confirms the pattern when price closes below the neckline. Because the neckline slopes downward in this example (not shown), I recommend entering the trade when price closes below the right armpit, which I show as the horizontal line at I. You'd short at the open the next day.

If you can program your computer to find head-and-shoulders tops, that's how you enter a trade. Nothing magical here.

What about the exit signal? Again, we could use a stop-loss order, but we already know that's not going to work from our previous example. We'd be testing various locations of the stop and not the chart pattern. So let's find the ultimate low.

Two rules:

1. Find the lowest low before price rises 20%, measured low to close.

2. If price closes above the top of the chart pattern, then the search for the ultimate low ends, and we use the lowest low found after entering the trade.

In this case, price breaks out downward from the head-and-shoulders top, drops to J, and then rises. The low at J is 14.60, so a 20% rise is 17.52. A close at 17.52 or higher will end the search for the ultimate low.

When price closes at K (at or above 17.52), the search for the ultimate low is over. We've found the ultimate low, which is J.

If K was a bit higher, then rule 2 would come into play. That's because price would close above the top of the head-and-shoulders, stopping the search for the ultimate low.

In this example, we are trading this head-and-shoulders perfectly. We are entering the trade at the opening price the day after a downward breakout, and we are closing it out at the ultimate low, the lowest low before price rises. A perfect trade. We are testing how well this chart pattern works. We're not testing stop-loss order placement or MACD or a moving average crossover scheme.

The performance of most of the chart patterns in this book follows these two ideas: the ultimate high and the ultimate low. For bullish patterns, I look for the ultimate high. For bearish patterns, I look for the ultimate low.

Chart Pattern Failures

Once you understand what a perfect trade means, you can look for failures. What does it mean when a chart pattern fails? To answer that, I had to invent a new concept, which I call the *breakeven failure rate* or the *5% failure rate*. Those two phrases are synonyms. All I did was count how many chart patterns failed to see price rise or decline more than 5%.

In a bull market, for example, I found that 18.8% of head-and-shoulders top patterns failed to see price drop more than 5%. If your cost of trading is 5%, then you'll know that nearly 20% of head-and-shoulders you trade, if you trade them perfectly and often enough, will fail to cover your costs.

Realistic?

So there you have it. Once you understand that I'm measuring performance from the breakout price to the ultimate high or low, then you'll understand most of the statistics in this book. You'll understand that the performance numbers are based on *perfect trades*, made hundreds or even thousands of times to arrive at the average rise or decline I show in Table x.2 (where x is the chapter number).

Are the results realistic? Not really. You likely won't be able to duplicate them in real life. You might do better or worse, depending on your skill and luck.

The double bottom example entered the trade the day after the breakout. If you placed a buy stop a penny above the top of the double bottom, you'd be entering at a better price (most of the time, based on my tests) than using the opening price the day after the breakout.

So you could do better than the numbers shown in this book. All you have to do is find the price of the ultimate high, weather the 20% drop, wait for a recovery, and sell at a price above the ultimate high. People who buy and hold do that all of the time.

For traders, though, it's more difficult. Finding the ultimate high in real time (as it's happening) is challenging. That's why people like me write these types of books.

1
How to Trade Chart Patterns

This book will help you identify dozens of chart pattern types. It will also do what no other book does: tell you how chart patterns have performed, over three decades, using statistics from hundreds or even thousands of samples.

That's not enough. That information won't make you a successful trader, but it will give you an edge over other traders. What's missing?

Experience.

If you have enough experience trading stocks, you should be able to look at a chart and determine whether it's time to buy, sell, or stay in cash. That's not as difficult as it seems.

When you look at a chart, look for a bullish chart pattern, such as a double bottom. If you find one that confirms as a valid chart pattern, then it's time to buy.

A confirmed double *top* means it's time to sell. If you do nothing else except trade those two chart patterns, you could make money. Buy when a double bottom appears (or any bullish pattern) and sell when a double top confirms (or any bearish chart pattern). The ride between those two might be bumpy, so you'll need to know how to use a stop-loss order.

Add bells and whistles—such as making sure the market is trending upward and the industry to which the stock belongs is also trending upward—and you'll have a smoother ride. Having both of those on your side increases your chance of a successful trade. Complete the picture with a bullish stock aching to rise, and you're good to go. I'll discuss this setup later in this chapter.

Let me share with you a few ideas on how I make my trading choices. I'll tell you about a few swing trading setups that work and then discuss the winners of performance contests.

Bottom Fishing, Buy the Dip

When I have cash I want to put to work in the stock market, I'll flip through 600 charts on my computer, looking for anything that interests me (that takes less than an hour unless I find something interesting). **Figure 1.1** shows a weekly chart that caught my attention. Why?

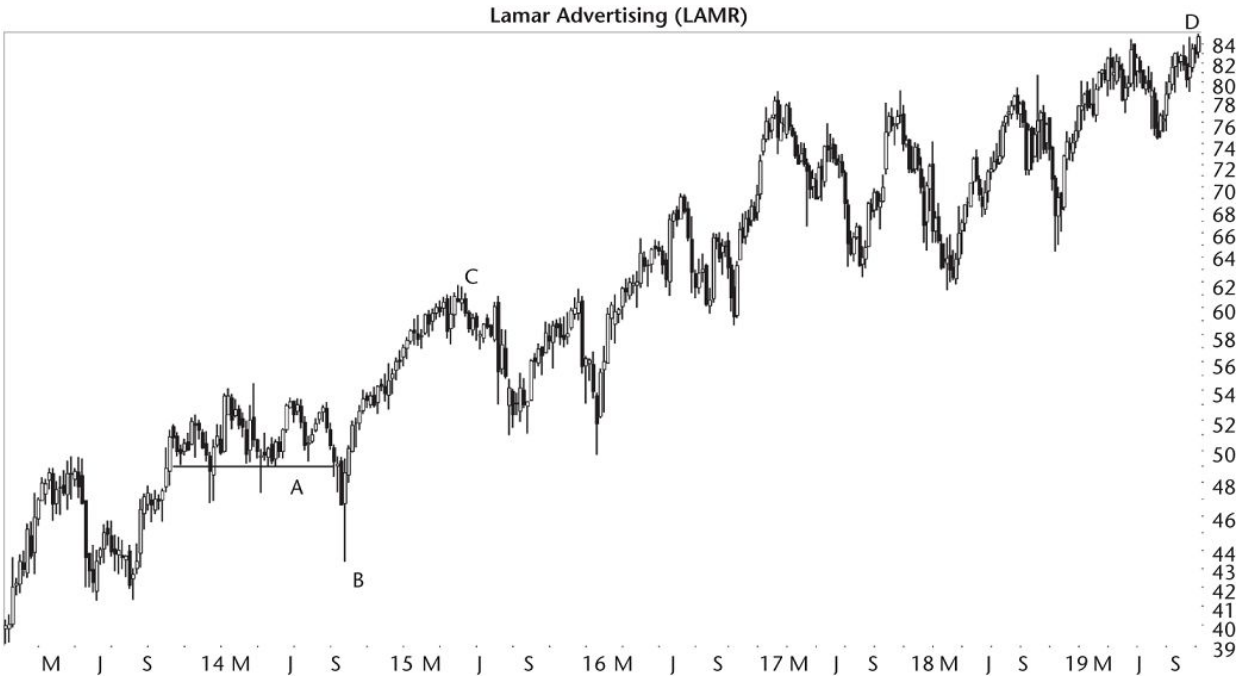


Figure 1.1 The pattern at A and B leads to a strong move higher.

Before I answer that, let me say that I prefer to bottom fish for stocks. That is, I prefer to buy low and sell high. I'm more successful at bottom fishing than momentum trading (buy high, sell higher).

Ideally, a bottom fishing expedition will yield an investment that turns into a momentum play when the stock soars and continues well into the stratosphere.

Some will claim that bottom fishing is a risky play, and they are right. But I argue that momentum trading is even riskier. Only you can decide which practice is best suited for your trading style. I use both, but I prefer fishing because as my portfolio has grown in size, I don't need to trade as much. I can devote my time to *living* instead of playing video games watching candlesticks form on the 5-minute scale.

Returning to the figure, the stock started out low on the left of the chart and climbed to the right, doubling in value. If you were to ride this chart like a rollercoaster, you might exit the ride and stumble around, feeling queasy.

When I looked at Figure 1.1, I wasn't thinking of buying the dip, but that's what I saw. Price moved horizontally at A (if you ignore the few downward price spikes, the bottom of the portion is reasonably flat) followed by a strong and quick plunge to B. After B, the stock recovered quickly to C and bobbled up and down, eventually rising into the clouds at D.

I put the chart aside and flipped to the next stock that caught my attention. **Figure 1.2** shows what I found (weekly chart, again). My software (which I wrote) groups charts by industry so I can get a sense of how the industry is behaving. I had moved from advertising (Figure 1.1) to airline stocks (Figure 1.2).

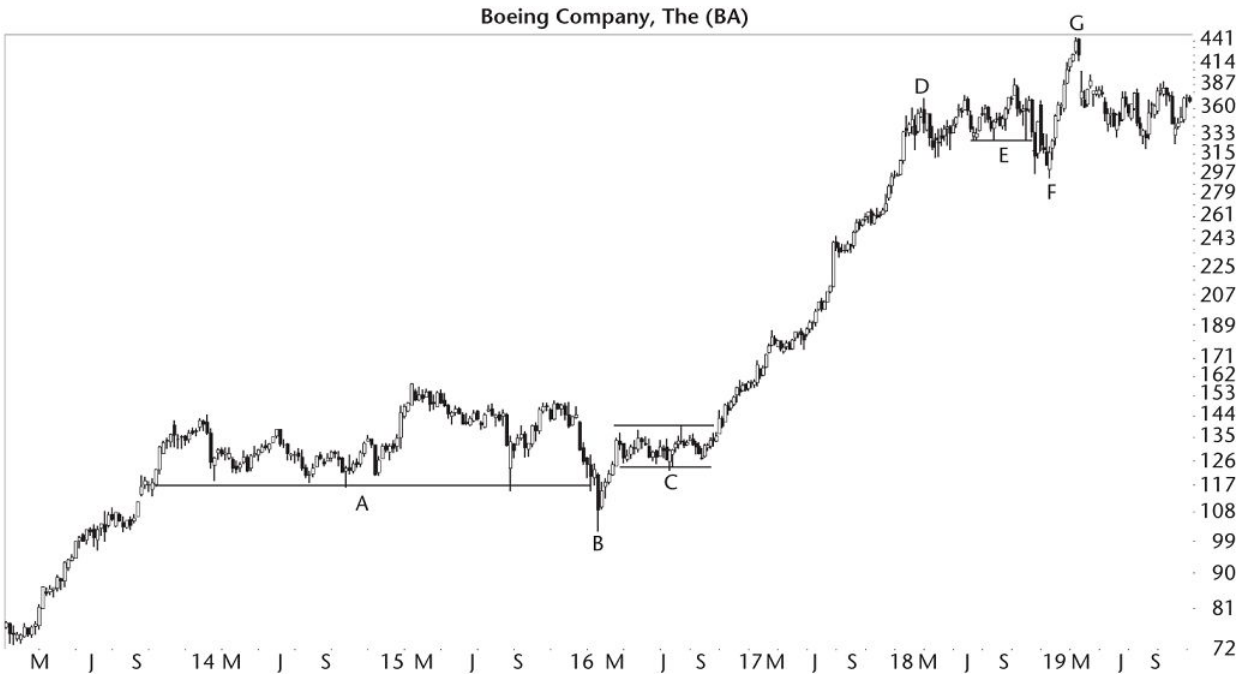


Figure 1.2 A diving board on the weekly scale leads to the stock climbing strongly.

There's the same pattern shown on this chart!

Point A is a flat base, lasting a long time (over 2 years). A plunge follows, taking the stock down fast to B, and then it recovers. This time, the stock zipped up (B to C) but went sideways in 2016 for about

6 months (C) before taking off and flying to D in a nice straight-line run that saw the stock triple in price.

The stock moved sideways again at E (another flat base, but shorter), dropped to F (not a fast drop), and soared to G. The EFG move is a pattern similar to the prior two (this chart and the prior figure), but not as clean looking nor as successful.

The pattern in Figure 1.1 happened in 2013–2014. Pattern AB (Figure 1.2) happened in 2013–2016, and pattern EF occurred in 2018. In other words, I'm finding the same pattern in different years, which is a good thing (potentially different market conditions). Flat base, sudden drop, and fast move higher: Could this be a winning setup that's worked for years?

After finding a number of these patterns, I hunted for those that failed to perform as expected. **Figure 1.3** shows an example of a failure (weekly chart). Notice that the flat base at A started in late 2014, the same as the other two charts. Price moved horizontally at A, dropped swiftly to B, and recovered but only to C before it tumbled to make a lower low at D. After D, though, the stock *did* take flight and delivered (a pun on the package delivery service, in case you missed it), which was reassuring if you buy and hold but terrifying for a swing or position trader who bought before C.

I looked for other examples and eventually catalogued my results. The research led to a pattern I call a diving board. I hunt for it on the weekly scale, but I've noticed variations of this pattern on the daily charts, too.

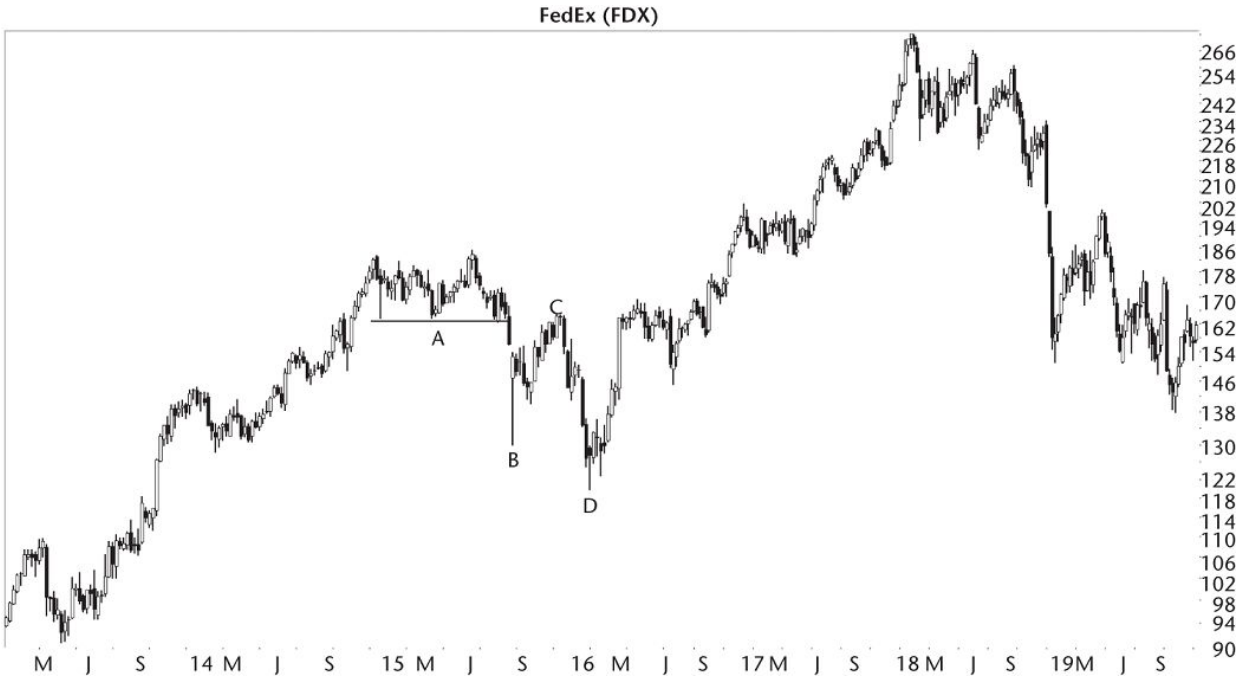


Figure 1.3 This diving board fails to act as expected.

As you look at the three charts, there are differences and there are similarities between them. What's important to performance? Is it the length of the pattern, how far price drops after the flat base, the industry the stock is a member of, or the time of year (seasonality or even bull/bear market)? By looking at a number of charts (and with the help of this book), you can answer those questions and become a more successful trader.

Daily Chart Setup

Figure 1.4 shows the same pattern in the advertising industry (which is suspicious because it's the same industry as Figure 1.1) but a different period (2018). The large breakaway gap up in early November (A) was because of third quarter results, which the market liked (hence the bullish gap). After that, price moved horizontally at B and made a strong push lower to C, followed by a headline-fetching rise up to G.

Along the way, earnings came out and helped momentum push the stock up (D and E). Near the top, earnings at F sent the stock lower, but only for a day. Perhaps the weak quarter was a warning of a coming trend change. At H, the market disliked earnings and seemed to confirm an end to the upward move, at least for a time.

I visited the company's website and found a headline for I (near the diving board), titled, “UBS Global Media and Communications Conference” webcast. I didn't listen to the broadcast, but the stock turned sharply lower a few days later, making a straight-line run down to C. I don't know if the webcast was the cause of the decline or what happened to send the stock skittering to C. If you owned this stock at the time, it would have been wonderful if you knew the cause of the drop (from I to C).

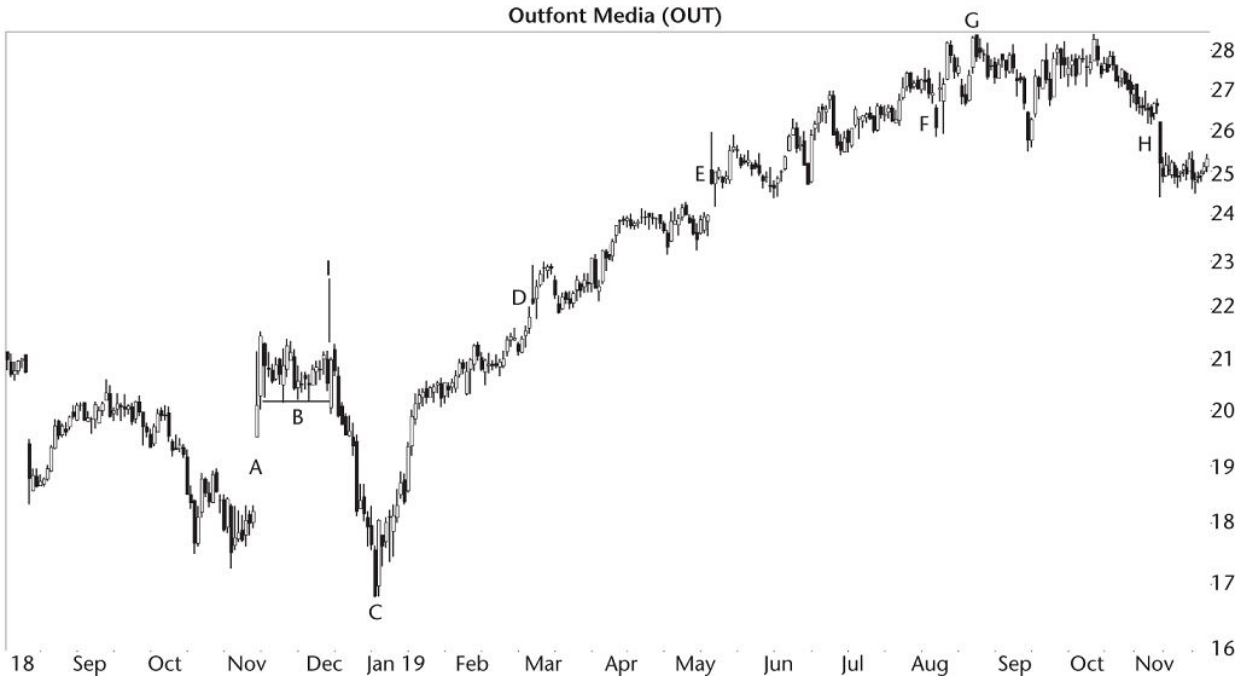


Figure 1.4 This diving board is on the daily chart.

This chart, on the daily scale, is similar to Figures 1.1 and 1.2. You can use these historical charts to formulate how to trade the pattern. If you can time your entry near C, then you can ride price back up to the base of the diving board (B).

You can wait for price to close above the highest peak at B and ride price upward to G. Below the bottom of the diving board (B) provides a good stop location, too.

The ride upward to G may not be as smooth as shown on this chart or in Figure 1.2 as price climbs from C to D. It might be as treacherous as the climb to D in Figure 1.1. When I look at this chart, though, I see dollar signs in the form of profit. All you have to do is find this pattern and have the courage to trade it.

Another Setup

Figure 1.5 shows another setup but one you should avoid (at least from the bullish side). The setup begins with price making a strong push higher, often in a straight-line run (but be flexible as in this example). I show that upward move at A and then B. The uptrend lasts several months and takes price from about 9 to 13 (which means, a good rise).

Price moves horizontally at C as if trying to catch its breath (ignore the downward February spike at C). The horizontal move should be proportional to the AB move. If AB shows a breathtaking rise, then expect C to be a long horizontal move while the bulls and bears regroup. In this example, AB is about 4 months long and C is 6 months long.

Figure 1.5 This U-shaped pattern delivers a failure.

After the topping pattern (C), price forms a chart pattern just below the base of the peak. I show that pattern at DE (a double bottom). The double bottom confirms at F when the doji (hard to see) closes above the top of the peak between valley's D and E. Price climbs only to G before reversing.

After G, the stock drops all the way to H. Traders expecting the double bottom to deliver profits to their wallet find holes in their pockets and the money gone.

I see this setup a lot. Price moves up, goes horizontal, and then a chart pattern appears (which can be any bullish pattern, like head-and-shoulders bottom, double bottom, or triple bottom). The pattern confirms as valid and price rises some before reversing and heading lower. The pattern busts its upward breakout, handing bulls a loss.

Just recognizing the double bottom (DE) as a tradable pattern isn't enough. If you research the setup by looking at other charts, you'll see how this setup can lead to a failure of a chart pattern.

This (the double bottom, or head-and-shoulders, or any bullish pattern at the end of the horizontal top) is a setup you'll want to avoid.

Pothole Setup

Figure 1.6 shows a rare setup on the weekly chart, but it's a variation of the pattern shown in the prior figure.

Figure 1.6 A pothole setup happens after a drop and flat base.

The company runs into trouble that lasts for the long term (months). That trouble takes price down from A to bottom at B. At B, the bears want to see the stock continue to drop, but bottom fishers like me see a good value. Buying demand keeps the stock from dropping much farther. A stalemate emerges with neither the bulls nor the bears winning, so the stock just lines sideways (the B to C move).

If the B to C move represents a highway, then CD is a pothole. It's a bear trap, though. Price drops to C and makes another bottom at D, forming a double bottom in this example. The CD move can represent any bullish pattern, like a head-and-shoulders bottom or triple bottom. Anyway, price climbs out of the hole and climbs and climbs and climbs (E).

If you're lucky, the stock will rise like it did here, but don't depend on that happening. I also find this example suspicious because it happens in 2013–2014, the same period as Figure 1.3. Still, it provides the template for the pothole setup.

The key to this pattern is the stock forming a bottom (flat base) followed by a pothole. Make sure the flat base appears after a downtrend. You don't want to go long if price trends up into the pattern (like Figure 1.5). See if you can find a reason why the stock wants to climb (during E in Figure 1.6). The reason could be a good quarter with a positive future outlook issued by the company. Maybe the cost of ingredients is going down or the company can raise prices on the goods they sell because the market for widgets is firming up.

If you look back at the figures in this chapter, they all have a flat base, a period of time where the stock goes horizontal. After that horizontal move, a pattern appears. In the first four figures, price drops (after the horizontal move). In the last two figures, a double bottom reversal sends price higher, at least for a time.

If you research these setups (that is, find examples in the stocks you trade), that will give you the confidence to trade a similar setup when it appears in a stock you'd like to own.

Here's another idea to help ease the research burden.

Patternz

I wrote pattern finding software for Windows that I call Patternz and made it available for free to download and use (visit my website: www.ThePatternSite.com). One of the things it does is simulate trades. I load up a bunch of stocks, tell it to find double bottoms (as an example, but they happen often), and let the program find them. Then I look at the context: the double bottom in the surrounding price landscape. I'll guess whether to make the trade or stay in cash, and then let the stock play out. It's like day trading on the 1 millisecond scale (you control playback speed). In seconds, I'll know whether the trade made money or not.

What I'm doing is training my brain not only to view the chart pattern, but to get a feel for the conditions where the pattern will thrive or fail. It's an easy way to train your brain to recognize winning and losing setups.

Suppose you find a stock showing a chart pattern you wish to buy. Spend an hour searching for similar setups using the Patternz simulator and you'll be able to tell whether your trade will *likely* work or not.

It's easy to find chart patterns. The Patternz software will find them for me. But having the experience to know whether they will work is what separates a seasoned professional from amateurs.

Amateurs are the ones paying for the dreams of the professionals. Stop giving away your money. Take the time to do the research to discover when a chart pattern will work and when it won't. Then put that knowledge to use to fill your wallet or purse.

That's how you trade chart patterns and make money doing it.

Another Way

I mentioned this setup in the introduction to this chapter. Look for a bullish pattern and buy it when it confirms. Sell when a bearish pattern appears. For example, **Figure 1.7** shows a double bottom at AB. The two valleys bottom near the same price. The squiggles turn into an actual double bottom when price closes above the horizontal line. That happens at C (the breakout). The next day, D, you buy the stock at the opening price and receive a fill of 7.40.

Figure 1.7 Here is a swing trade using a double bottom and a double top.

From then on, you look for a bearish pattern, one that says the stock is going down. A double top appears at EF. The two peaks top out near the same price. It confirms as a valid double top when price closes below the horizontal line, G. The next day, you sell your shares at the open and receive a fill at 10.60. The difference is $3.20 or 43% above the buy price.

In fact, if you had spotted an earlier double top (I), you could have sold a day after the downward breakout (J) and received a slightly better fill, at 11.00, for a net gain on the trade of 49%.

If you sold the day after J, you might be kicking yourself for selling too soon. Why? Because price continued to rise to E and higher to F. If you were astute, you may have recognized a 2B pattern at F and sold sooner, making even more money. Don't look for the 2B pattern in this book because I don't review it. Visit my website for details if you're interested in the 2B.

Of course, I cherry picked this trade, and often things aren't as easy as this example suggests. But the idea is simple. Buy bullish patterns and sell bearish ones. Yes, you'll have to find stocks that you believe show promise in an industry doing well and during a rising market (you will want the stock, industry, and market trending in the same direction for the best result).

You may want to score the chart pattern, too. I described the scoring mechanism in my second book, *Trading Classic Chart Patterns*. A review of the technique over a decade later shows it still works well. It will help you select patterns that perform better and avoid the duds.

Knots and Swing Trading Pullbacks

Let's dig in and discuss some swing trading setups. **Figure 1.8** shows what I call a knot. It's a useful way of detecting when a pullback will start and at what price. It's ideal for swing traders who want to make money when price breaks out downward from a chart pattern in its initial push lower.

Let's look at Steelcase on the left of the figure. A double top forms at AB and confirms at C when price closes below the horizontal line. How low will the stock drop in its initial descent?

Answer: to the knot at D. I define a knot as a place in a strong trend (E to A in this example) where price moves sideways for at least 3 days. When it's the *first* knot *closest* to the double bottom (the first location of support, really, below the pattern's breakout), expect the stock to bottom there and begin a pullback.

In this example, knot D is the first support area below C. Price reaches the area at F and begins to pull back to the price of C.

In my experience with knots, I know to place an order to close out the trade at the *top* of the knot, not the middle or bottom. Sometimes, price touches the top of the knot and reverses. At other times, the stock drops like we see here at F before reversing.

Setup 2

Let's take the case on the far right of the figure (“Setup 2”). In the rise from I to H, there is no knot of support. The uphill move is fast and long.

The way to trade this is to split the move in half and place an order to close out the trade there. In this example, midway up the run from I to H is J. Place an order to cover a short at J. After the double top FG confirms when price closes below H, price drops to K before beginning a pullback.

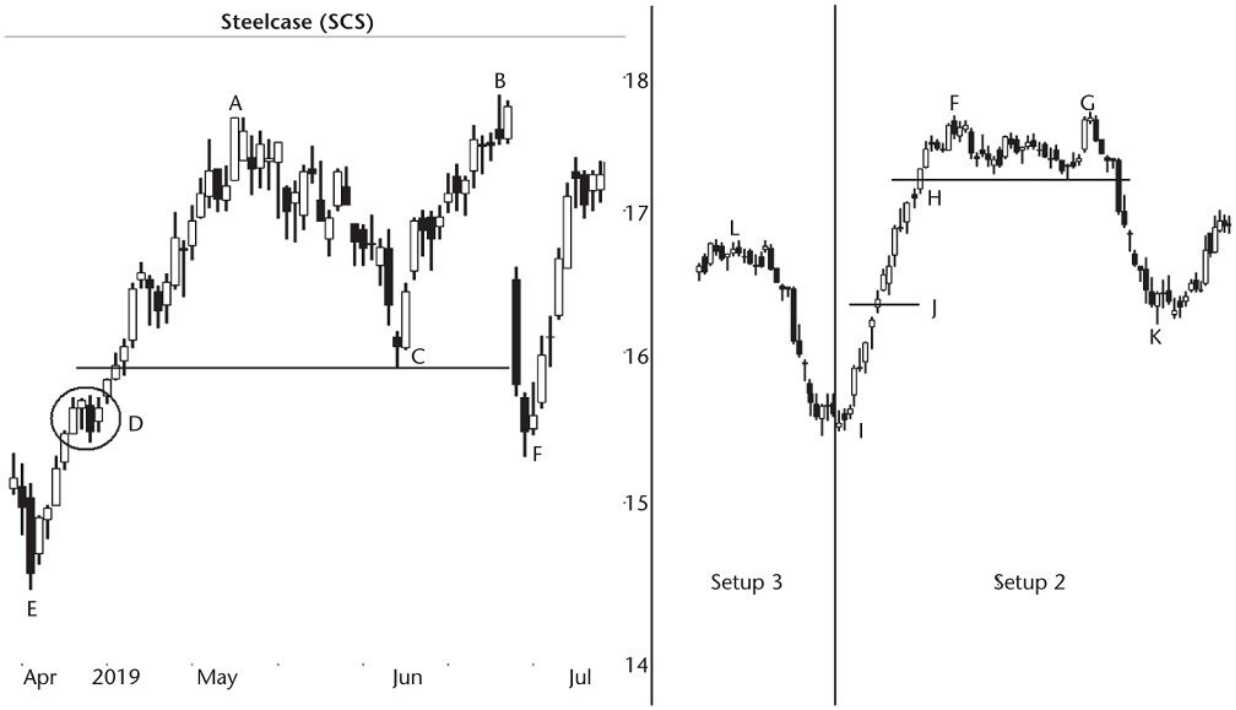


Figure 1.8 Shown are three ways to trade a pullback.

You don't see this setup often because there is usually a knot along the uphill run from I to H, but it does happen. Take advantage of it and expect the stock to find support midway in the I to H run like it does here at J.

If the run *does* show a knot but it looks too far below the chart pattern, then split the run in half like I've explained. In technical terms, if support is too far away, then price will reverse closer to the chart pattern. What is closer? Most pullbacks bottom in the 7% to 8% range. If a knot is 10% or 15% away, then that's too far unless there's a

fundamental reason to drive price down hard and fast (bad earnings, bad future outlook, that kind of thing).

If the move from I to H is exceptionally long, you might want to split the run into thirds and place a trading order a third of the way down to I from H. Search for other stocks showing the same pattern and see where they turn. The Patternz simulator can make the search easy.

Setup 3

Another setup is similar to Setup 2 except there's support between J and H, but not in the same upward trend. Let's rewind the tape and start at the beginning.

Imagine that the line separating Setup 3 from Setup 2 is missing. We see a strong move higher from I to H. We could take half that move and assume price is going to drop back to that area, just as we did in Setup 2. However, looking to the left of I, we see peak L. It's a mean-looking knot of support with price going horizontal for a week or two (but need not be that extensive; a simple well-defined top can do).

Instead of using Setup 2 to place the exit trade midway at J, it's more likely that the stock will drop to the price of L and reverse there. So L is our target. We place a stop a penny above G, place our order to short a penny below the price of H, and use the top of L as the exit.

Knots and Throwbacks

Figure 1.9 shows two more scenarios for swing trading the stock. The left panel shows a double bottom at AB, confirmed when price closes above C. As a swing trader, you don't want to wait to buy into this situation, so you place a buy stop a penny above C. That gets you into the trade right on time.

How far will price rise? Answer: to D. That's the first knot. The knot is the closest region to the breakout where price moves horizontally for at least 3 days. That horizontal movement is obvious because it rests in the circle to the left of D.

D is your short-term swing target. The stock will rise and hit that region and likely turn back to the breakout in a throwback (which it did in this example, after reaching E).

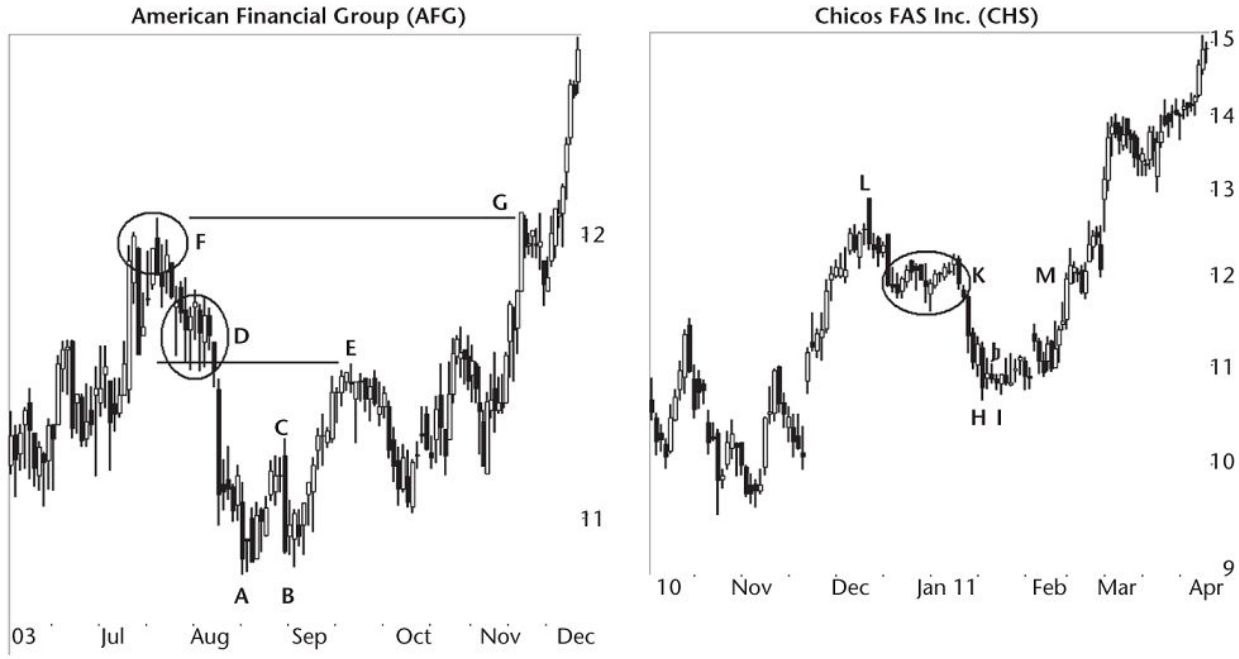


Figure 1.9 Here are two setups that work well for swing trading throwbacks.

You can set a limit order to sell at the top of the knot, but the bottom of the knot works better (less risky). In this case, it *did* work better when the rise to E triggered the order and sold the position. You don't make a lot of money trading the throwback (7% or 8%), so you might have to increase the position size to make it worthwhile. *Do* place a

stop-loss order a penny below the lower of the two bottoms (below A in this case).

Setup 2

The prior setup captures the run up to the throwback. What if you want to capture more of an advance? This is a more risky setup, but it also works well. Look for the second higher knot. I show that at F. That's your target.

In this case, the knot is composed of peaks, a ragged top with price spiking upward. Price also moves sideways here for at least 3 days, with lots of overlap, so it's a good area of overhead resistance.

The stock recovers from the throwback and rises to G where it hits resistance setup by the second, higher knot, F. After that, price struggles to push through that resistance but eventually does in this example.

Setup 3

The right half of the figure shows a similar setup. A small double bottom is at HI, confirmed when price closes above J (it's hard to see where that is, though). In this setup, we have a measured move down pattern from L to K (first leg), K is the corrective phase, and KH is the second leg.

We know from studying measured moves that price returns to the corrective phase 77% of the time (see Table 46.5, where 23% remain below the corrective phase and 77% move higher). We know price is going to climb to K. K becomes our target. We use a buy stop a penny above the high at J, a limit order to sell at K, and place a stop a penny below the low at H.

Test these setups in the stocks and markets you trade. Make adjustments accordingly so that they work for your trading style.

Performance Contests

Imagine Dave likes to bowl and he plays three games per match. Over a month he competes five times and wins three out of five matches with one tie. If we tally his win/loss record not for the 15 individual games, but for the five matches, we find he wins 75% of the time (three of four contests with one tie). We might conclude that he's a good bowler or those competing against him are not. I built the following tables just like I described with Dave. They show how often an aspect of a chart pattern leads to better or worse performance.

Table 1.1: Reversals versus Continuations shows the results of the first contest: Which types of patterns perform better, those acting as reversals or continuations? Before I answer that, what is a reversal and a continuation?

A pattern acting as a reversal happens when price enters and exits a chart pattern from different directions (down going into the pattern and exiting out the top, or rising into a pattern and breaking out downward). Patterns acting as continuations see price enter and exit the chart pattern in the same direction (down going into the pattern and breaking out downward, or rising into a pattern and exiting upward).

For example, Figure 1.7 shows double bottom AB acting as a reversal because price drops into the pattern and leaves it going upward. The downtrend reverses. The rectangle at C in Figure 1.2 is a continuation pattern. Price rises into the start of the rectangle (from B) and exits out the top. That is, price *continues* in the direction of the prevailing price trend.

Table 1.1 Reversals (R) versus Continuations (C)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Reversals (55%)	Reversals (73%)
Performance	43% R, 42% C	30% R, 26% C
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Continuations (87%)	Continuations (75%)
Performance	–14% R, –16% C	–22% R, –23% C

Winner. Table 1.1 tells us that reversals work best after upward breakouts and continuations work best after downward breakouts. For example, I found 55% of chart patterns acting as reversals outperformed continuation patterns in bull markets after upward breakouts. Almost all (87%) of the chart patterns after downward breakouts in bull markets showed patterns acting as continuations beating those which acted as reversals.

Performance. This line in the table shows the average gain or loss for the contests. For example, reversals in bull markets after upward breakouts gained 43%. Continuation patterns saw price rise 42%. Notice that the differences between the contests are often narrow. Continuations, for example, lead by one or two percentage points. The narrow lead is a warning that the indicator is weak as a predictor of future performance.

Table 1.2: Height. Do tall patterns outperform short ones? Tall or short is a measure of the height of the chart pattern divided by the breakout price.

Winner. This line shows how chart pattern performance varies with height. I contend that tall patterns outperform short ones, and we find that belief is true in all market conditions and breakout directions. For example, tall patterns win all of the contests (100%) after downward breakouts in bull markets.

Performance. The performance averages are wide, too, with tall patterns gaining an average of 46% and short ones gaining just 39% (bull market, up breakout). I believe height is a key indicator of future

performance, so you'll want to trade tall patterns and avoid short ones.

Table 1.3: Width. Do wide patterns outperform short ones? I measure width from the start to the end of the pattern.

Winner. The numbers in the table tell how well width works as an indicator of chart pattern performance. Contests from patterns in bull markets perform better when they are wide. Bear market patterns show a tie.

Performance. Most performance differences are marginal (one or two percentage points). For example, after downward breakouts in bear markets, wide patterns see price drop 23% on the way to the ultimate low, but narrow ones see price drop an average of 22%. Thus, width is not a strong predictor of performance, but it can give you an edge in bull markets (where performance differences are wider).

Table 1.2 Height: Tall (T) versus Short (S)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Tall (89%)	Tall (89%)
Performance	46% T, 39% S	30% T, 25% S
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Tall (100%)	Tall (87%)
Performance	–17% T, –13% S	–23% T, –21% S

Table 1.3 Width: Wide (W) versus Narrow (N)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Wide (81%)	Tie (50%)
Performance	45% W, 40% N	28% W, 27% N
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Wide (85%)	Tie (50%)
Performance	–16% W, –14% N	–23% W, –22% N

Table 1.4 Breakout Day Gap (G) versus No Gap (N)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Gap (68%)	Tie (50%)
Performance	45% G, 42% N	28% G, 28% N
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Gap (85%)	Gap (57%)
Performance	–16% G, –15% N	–23% G, –22% N

Table 1.4: Breakout day gap. Do gaps that occur on the day of breakout help performance?

Winner, Performance. After downward breakouts in bull markets, I found that 85% of the chart pattern types showed a gap helping performance. The chart patterns dropped an average of 16% versus 15% for those not showing a breakout gap.

Notice that the percentages on the performance line are close, suggesting gaps are not a strong performance indicator, either. Because I measure performance using the opening price the day *after* the breakout day gap, you can participate in the better performance that a gap may provide.

Table 1.5: Throwbacks and pullbacks. Throwbacks and pullbacks are features I love. When they appear, they invariably hurt performance. The table shows the blood. A throwback happens after

an *upward* breakout from a chart pattern when price soars but then returns to the breakout price (or comes close to it) within a month. Pullbacks are the same except the breakout is downward.

Winner, Performance. For example, 97% of the time I found that throwbacks hurt performance after upward breakouts in bull markets. In contests of patterns with downward breakouts in bear markets, all of them (100%) showed that pullbacks hurt performance. The average decline of those contests was 26% for those patterns not showing a pullback (N) and 20% for those that did pull back (P). For a downward breakout, that's a wide difference.

Table 1.5 Throwbacks (T) and Pullbacks (P) versus None (N)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Throwbacks (97%)	Throwbacks (89%)
Performance	40% T, 48% N	25% T, 33% N
Occurrence	64%	65%
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Pullbacks (91%)	Pullbacks (100%)
Performance	–14% P, –17% N	–20% P, –26% N
Occurrence	64%	63%

Occurrence. The Occurrence line in the table shows how often a throwback or pullback occurred, on average. Throwbacks and pullbacks happen almost two out of three times (63% to 65%).

Table 1.6: Rising or falling volume. The table shows how patterns behave if volume is rising or falling from the start of the pattern to the end, found using linear regression.

Winner. For upward breakouts, performance improves just over 60% of the time if volume is rising. Downward breakouts are mixed with bull markets in patterns showing falling volume doing best but bear markets show a tie.

Performance. The performance numbers are close, though, especially for downward breakouts. For example, patterns with rising

volume (R) saw price climb 44% to the ultimate high (bull market, up breakout). Patterns with falling volume (F) showed gains averaging 42%. The volume trend is not a good predictor of future performance.

I think technical analysts put too much emphasis on volume. (Consider that for every share sold, one is bought. If institutions are selling massive amounts of shares, then other institutions are buying those shares.)

Table 1.7: Heavy versus light breakout day volume. I compared breakout day volume with the prior month.

Table 1.6 Rising (R) versus Falling (F) Volume

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Rising (62%)	Rising (61%)
Performance	44% R, 42% F	29% R, 27% F
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Falling (56%)	Tie (50%)
Performance	–15% R, –15% F	–22% R, –22% F

Table 1.7 Heavy (H) versus Light (L) Breakout Day Volume

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Heavy (79%)	Heavy (79%)
Performance	43% H, 41% L	29% H, 26% L
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Heavy (67%)	Light (55%)
Performance	–15% H, –15% L	–22% H, –22% L

Winner, Performance. The table shows that heavy breakout day volume suggests better performance most of the time. For example, I found that 79% of the time after upward breakouts in bear markets, high volume led to better performance by 29% (for heavy volume)

versus gains averaging 26% for patterns with light breakout day volume.

You will notice that the percentage difference is not great, especially after downward breakouts (which show ties). Breakout volume is not as good a predictor of performance as many believe.

Table 1.8: Trend change. This table is different from the others. It shows how often price continues rising or falling more than 20% after the breakout. My thinking is that if a chart pattern shows large post-breakout moves, then it should be easier to make money trading them. Conversely, a pattern that has lots of small moves may be difficult to trade profitably.

Occurrence. Only in bull markets do the majority (55%) of chart pattern types see price rise more than 20%. The worst performance (28%) comes from chart pattern types with downward breakouts in bull markets. That poor performance makes intuitive sense because the market trend is upward but the breakout is downward. It's like swimming against the current, so you'd expect the swimmer to struggle.

Notice that downward breakouts in bear markets place second (49%). It's another indication that trading with the trend (upward breakouts in bull markets and downward breakouts in bear markets) leads to better performance.

Table 1.8 Trend Change

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Occurrence	55%	46%
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Occurrence	28%	49%

Table 1.9 Single Busted Patterns (S) versus Proxy (P)

	Bull Market, Up Breakout	**Bear Market, Up Breakout**
Winner	Single bust (97%)	Single bust (75%)
Performance	–22% S, –15% P	–24% S, –22% P
Single bust occurrence	53%	76%
	Bull Market, Down Breakout	**Bear Market, Down Breakout**
Winner	Single bust (94%)	Single bust (79%)
Performance	53% S, 41% P	40% S, 28% P
Single bust occurrence	70%	63%

Table 1.9: Single busted patterns versus proxy. The final table in this chapter shows how well busted patterns perform against non-busted ones.

Winner. Single busted patterns outperform their non-busted counterparts a good portion of the time. That's especially true for chart patterns in bull markets. They win more than 90% of the contests. Bear markets also win contests, but at a more sedate pace.

Performance. I compared the performance of single busted patterns with their proxy (P), the non-busted pattern. In most cases, the performance difference is quite wide.

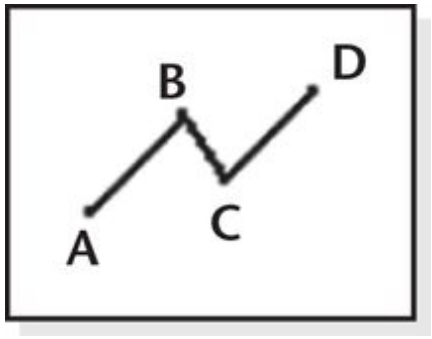
For example, in bear markets after downward breakouts, single busted patterns with downward breakouts saw price rise an average of 40% above the top of the chart pattern. The non-busted patterns saw price climb just 28%, on average.

Occurrence. This line tells how often a single busted pattern happens (versus double or more than two busts). The higher the number, the easier it'll be to trade a busted pattern that wins big. That means you are more likely to trade a single busted pattern than a pattern that double or triple+ busts.

Bull markets with upward breakouts show fewer single busts (53%) than the others. I think that's because when the pattern busts, price will be heading lower and that's going against the bullish current. It invites a double bust.

The chapters that follow look at individual chart patterns. I use statistics to help discover how they behave, and I share my findings with you.

2
AB=CD®, Bearish



RESULTS SNAPSHOT

Appearance: A three-leg zigzag pattern with two turns located by Fibonacci ratios.

Downward Moves

	Bull Market	**Bear Market**
Performance rank	5 (worst) out of 5	3 out of 5
Breakeven failure rate	26.3%	10.2%
Average drop	–12.7%	–21.6%
Volume trend	Downward	Downward
Point D reversal rate	32%	38%
How many reach point D?	95%	98%
See also	Bearish bat, bearish butterfly, bearish crab, bearish Gartley, measured move up	

You'll need a computer to find this pattern unless you're incredibly fast with a calculator and have lots of time to waste searching for the thing. If you have access to a computer with pattern recognition software, then this pattern is as plentiful as hair on a gorilla. If your

software is better than mine or you have special sauce that you can add to the ingredients, then your pattern may behave differently than the ones I studied.

I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The bearish AB=CD performs in two ways. First, if you know the first three turns (ABC), then you can anticipate at what price the last turn (D) will appear. This works well, with price reaching D nearly all of the time (95% of the time or more). Second, once price reaches D, it's supposed to turn lower. My tests show this doesn't work well (only 32% to 38% of the time). As I mentioned, this could be a flaw with the model I used. Your software may perform differently.

Let's run through the rest of the Results Snapshot for the bull market (you can compare the results with the bear market). I measured the drop from the peak at turn D (the last in the pattern) to the ultimate low. Of the five bearish Fibonacci-based patterns I studied, this one performs worst in the bull market when price drops just 12.7%. The breakeven failure rate is 26.3%, which is high. That means price fails to drop more than 5% over a quarter of the time. Volume trends downward, but it's close to random.

Let's take a closer look at this pattern to discover what this mysterious point D is and what the pattern looks like.

Tour

The bearish AB=CD is a Fibonacci based pattern, meaning Fibonacci ratios determine the turning points.

Figure 2.1 shows an example of a bearish AB=CD pattern. The pattern appears as turns ABCD on the chart. In this example, leg AB's height is similar to the height of CD, hence the name of the pattern. In the *ideal* case, you'll see leg CD equal AB. Often, however, the CD leg may be a Fibonacci extension away (meaning point D can be far away from the other three turns). That's not a flaw. Rather, that's just the way the pattern is constructed.

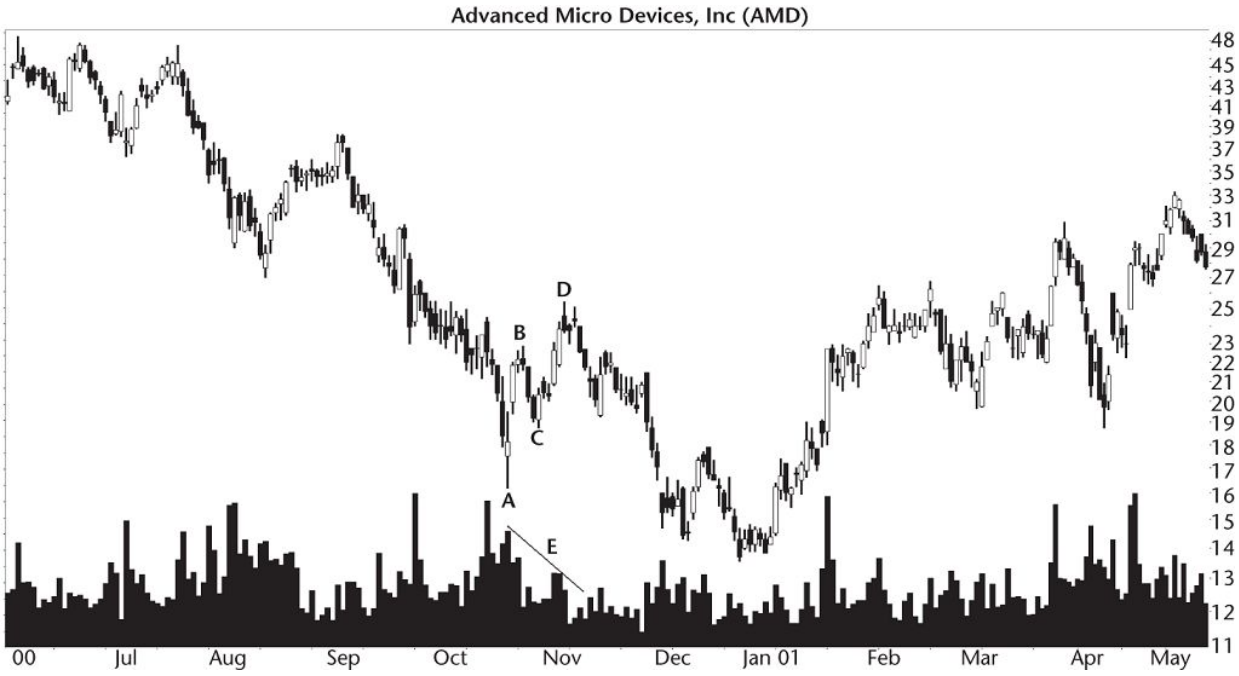


Figure 2.1 A bearish AB=CD pattern correctly predicts a downward move in the stock after turn D.

The duration (days) of AB should also equal the CD duration in the ideal case. Here we see leg AB lasting 6 calendar days and CD lasting 8. That's quite close, isn't it? Most of the time, like I described for price, point D's date can be far removed from the other points.

In well-behaved patterns of this type, the slope of the AB line should be similar to the CD slope, with a retrace in between. That's almost what you see in Figure 2.1, but it's seldom that pretty. In fact, you can

see some bizarre-looking AB=CD patterns even though they qualify as valid Fibonacci patterns.

Volume trends downward in this example, shown on the chart as E.

This ABCD is a good performer. Price completes a tidy and compact-looking pattern and then price falls, making an extended decline into December. That's how the pattern is supposed to behave.

Let's go through the guidelines for identifying these patterns.

Identification Guidelines

Table 2.1 shows identification guidelines for the chart pattern, and Figure 2.2 shows a typical example. The pattern appears in the figure as ABCD.

Appearance. As I mentioned, the shape of the bearish AB=CD can look weird when point D is far from the ABC turns. The figure is an example of that asymmetry, but not an extreme one. Leg AB is 36 days long, so you might expect (or hope) the CD move to also be that long. It's not. CD is 66 days long or almost twice the AB duration. It'll be rare that leg CD matches the length of AB. Just because CD is almost twice as far away as AB doesn't mean the pattern is invalid. Rather, the turn is determined by the Fibonacci number used to located it.

Table 2.1 Identification Guidelines

Characteristic	Discussion
Appearance	A three-leg zigzag pattern with two turns located by Fibonacci ratios.
BC/BA retrace	The ratio of BC/BA is one of .382, .5, .618, .707, .786, or .886.
DC/BC extension	The extension of leg DC to BC is one of the Fibonacci numbers: 1.13, 1.27, 1.41, 1.618, 2, 2.24, 2.618, or 3.14.
Hills and valleys	From A to B, there should be no valley lower than A and no peak higher than B. From B to C, there should be peak higher than B and no valley lower than C. From C to D, there should be no valley lower than C and no peak higher than D.
Volume	Trends downward most often. Don't ignore a pattern because of an unusual volume trend.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

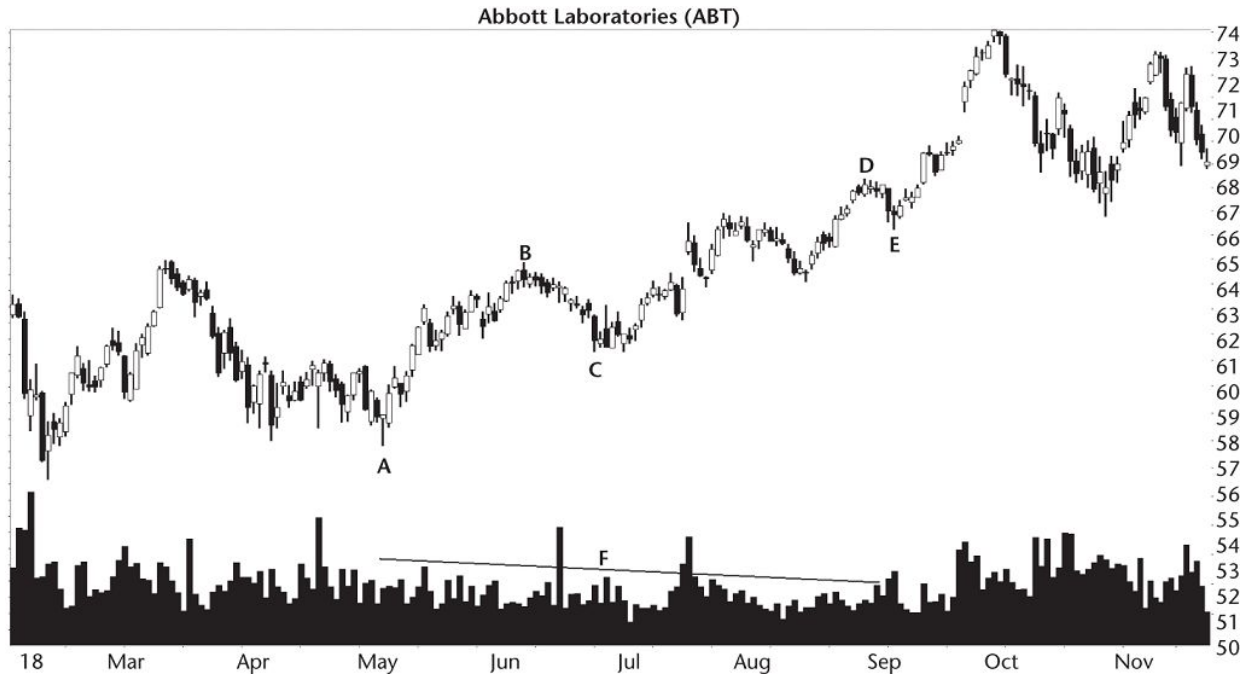


Figure 2.2 This bearish AB=CD pattern breaks out upward.

Let's talk about the Fibonacci ratios.

BC/AB retrace. Retrace BC compared to the height of BA is governed by the Fibonacci numbers listed in the table. Let's give your slide rule a workout and go through the math. The low at point A is 56.81, and the high at B is 63.85 for a height of 7.04. The low at C is 60.32. I tuned my software to find a turn within .01 (1%) of one of the numbers listed in the table, so we get (63.85 – 60.32)/(63.85 – 56.81) or 50.1%. That value is almost exactly the 50% retrace (.5). So the ABC turn meets the guidelines.

DC/BC extension. If you invert the ratio found in the last step, you use it to find the price of D. In this example, we found the closest Fibonacci number to be .5, so we'd expect point D to be twice as far away. To put it another way, let's pick a point D where the ratio of DC to BC is 2. The high at point D is 67.36, so the equation is (67.36 – 60.32)/(63.85 – 60.32) or 1.99 (or about 2).

We found turn ABC to obey one of the numbers listed in the table, and we also found point D using a Fibonacci extension (one of them listed in the table), so we found a valid AB=CD pattern.

In this example, price turns down at D, just like it's supposed to. However, the drop is brief (to E).

Hills and valleys. I excluded any pattern that had a peak or valley outside of the turns as described in the table.

Volume. Although it may not look like a downward volume trend in this example (F), linear regression says it recedes. In fact, you'll see volume trending downward in most AB=CD patterns and other chart pattern types, too. If volume trends upward, that's fine. Don't throw away a pattern because of an unusual volume trend.

Duration. I imposed a 6-month limit to the length of most chart patterns, including the AB=CD. It's an arbitrary limit.

Focus on Failures

Figure 2.3 shows an example of a failed bearish AB=CD pattern (labeled as turns ABCD). The pattern fails in multiple ways. The first is that price doesn't make it up to the predicted point D.

Turn A has a low price of 134.82, B has a high of 148.28, and C has a low of 139.95. That gives a BC/BA retrace of .618, so the turn qualifies as a valid AB=CD. It predicts that point D should be at 153.41 using the formula: D = (B – C)/Ratio + C.

As the figure shows, point D falls well short of the target, which I show as F. Instead, price rises only to D before dropping to E. Imagine that you wanted to trade the anticipated rise to point D by buying the stock soon after turn C. You placed a stop a few pennies below C, and you would have been stopped out at E, which reached a low of 139.79, slightly below the low at C.

As I mentioned in the Identification Guidelines, there can't be a low below C on the way to the calculated point D. Point E stops the search for D because it's below the low at C. If you ignore that rule, then you have discovered the second failure type.

Figure 2.3 Price is supposed to turn down at F, but the search for point D ends when point E is below C.

The second way this AB=CD fails is when price continues rising instead of turning at D. If we ignore the lower low violation at E and assume price climbs to F, where turn D should be (153.41), then look what price does. It continues rising, doesn't it? So price fails to turn at the new target D and moves to G, peaking at 158.77, well above the 153.41 target. Shorting the stock at F would have tested a trader's courage against a rising price trend when the stock climbed to G.

Look back at Figure 2.2 where it shows another example of how the pattern fails to see price decline much after D. Price drops from 67.36 (point D) to 65.22 (point E), a drop of 2.14 points or 3%. Could you make money shorting the stock at D, knowing that if you traded it perfectly, you'd make 3%?

If you owned the stock (long) and sold at D thinking price would drop, you'd be happy that the stock dropped to E, but your joy would turn to sadness when the stock continued climbing up to F and beyond. It would say you'd made a mistake.

Of course I chose Figure 2.3 to highlight the failure of this pattern to perform as expected. That's what the Focus on Failures section is supposed to do. In the next section, we'll see what the numbers say about how this pattern behaves.

Statistics

Table 2.2 shows general statistics for the bearish AB=CD and tailored to the Fibonacci pattern. That means you won't find explanations for the table entries in the Glossary. Most are self-explanatory.

Number found. If you can program your computer to find them, you'll discover that they come out like worms after a heavy downpour. They were so plentiful that I limited the number catalogued per stock.

I found the first pattern in February 1990 and the most recent in February 2020, finding them in 884 stocks. Not all stocks covered the entire period, and some stocks no longer trade.

Table 2.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,649	696
Breakeven failure rate	26.3%	10.2%
Average decline after D	–12.7%	–21.6%
Volume trend	54% Downward	58% Downward
Performance Up/Down volume	–13%U, –13%D	–19%U, –24%D

Breakeven failure rate. For those patterns that see price make it up to D and reverse there, this is a measure of how often price fails to drop more 5% (below the high at D). The bull market value is high (ranking fourth out of five, where one has the lowest failure rate), but the bear market rate, at 10.2%, is the worst of the five bearish Fibonacci patterns I looked at.

Average decline after D. This is a measure of the drop after point D, for those patterns seeing price make it up to point D and reverse there. As one would expect, the drop in bear markets is larger than in bull markets. If you were to trade the bearish AB=CD pattern perfectly and frequently, this is how much you could make on average. Commissions were not included.

Volume trend. I used linear regression from the start to end of the pattern and found it trends downward most of the time, but it's near random.

Performance Up/Down volume. I checked performance when volume was trending up or down. This applies only to those patterns that turned down at D. The bull market shows no performance difference, but in bear markets, the performance difference is wider and substantial. Patterns with downward-sloping volume see price drop an average of 24% compared to a 19% decline for those with up-sloping volume.

Trading Tactics

The AB=CD pattern can be a wonderful tool to help predict when price will turn and then make a substantial decline. Once you know the first three turns, you can determine when and at what price the fourth turn will appear. And when turn D appears, the stock will drop. Does it really work like that? Let's find out.

Table 2.3 shows how price behaves after point D.

How often does price reach or exceed D? I checked how often price climbed far enough to reach the calculated price of D. The table shows that nearly all of the patterns reached the target turn.

Table 2.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price reach or exceed D?	95%	98%
How often does price turn at D?	32%	38%
How often does D appear within a week of calculated time?	43%	45%
How many drop to point A?	24%	36%
How many drop to point B?	76%	87%
How many drop to point C?	35%	46%

That's terrific! Swing traders can use this to predict how far price will rise. They can even trade it by buying at the low at C and riding price higher, to D.

How often does price turn at D? I checked each pattern to see if a minor high formed at the calculated point D. I found that only about a third of the time will you see price turn lower at the calculated price of D. Because we know price rises to D nearly all of the time, we can assume that price continues beyond D instead of turning lower when it should.

This finding is not a deal breaker. Now that we know price will likely continue rising, we can just stay in our trade (when we bought after turn C) and ride the stock upward until it does turn.

How often does D appear within a week of calculated time? The pattern can work as a predictor of *when* point D will occur (as well as the price of the turn). I found the dates of the ABC turns and found the ratio of CB to BA. Then point D followed the equation: D = (C – B)/Ratio + C using dates instead of price.

I found that between 43% and 45% of the time point D appeared within (plus or minus a 2-week window) a week of when it was supposed to. Because the numbers fall well short of the expected time, I don't think this measure is helpful.

How many drop to...? If price reaches D and turns down, we know that the average decline measures between 12% and 22% from Table 2.2. Let's measure how far price drops in terms of turns A, B, and C.

Point B is closest to turn D, so we would expect the stock to drop that far most often. Indeed, the table shows that price reaches turn B between 76% and 87% of the time. Price will drop to C less often (35% to 46% of the time) and reach the bottom of the pattern (point A) even less often.

Using these values, we can get a sense of how far price might decline. It could be less or more, depending on the situation, of course. But at least we have a roadmap.

Sample Trade

Figure 2.4 shows a sample trade using the AB=CD pattern.

Jacob poked me in the ribs, then pointed to the screen to discuss his trade. “See that? It's a double bottom.”

His fingers traced the twin bottoms at EA with a nice peak (F) between them. “I can make money trading that.”

He placed a buy stop a penny above F. That order triggered at G, putting him into the stock near the breakout price. Immediately, he placed a stop a penny below the lower of the two bottoms, which in this case, was A, at 37.12. If the trade went bad, he'd lose about 10%.

“That's bigger than the 8% I like to see, but you have to be flexible,” he told me.

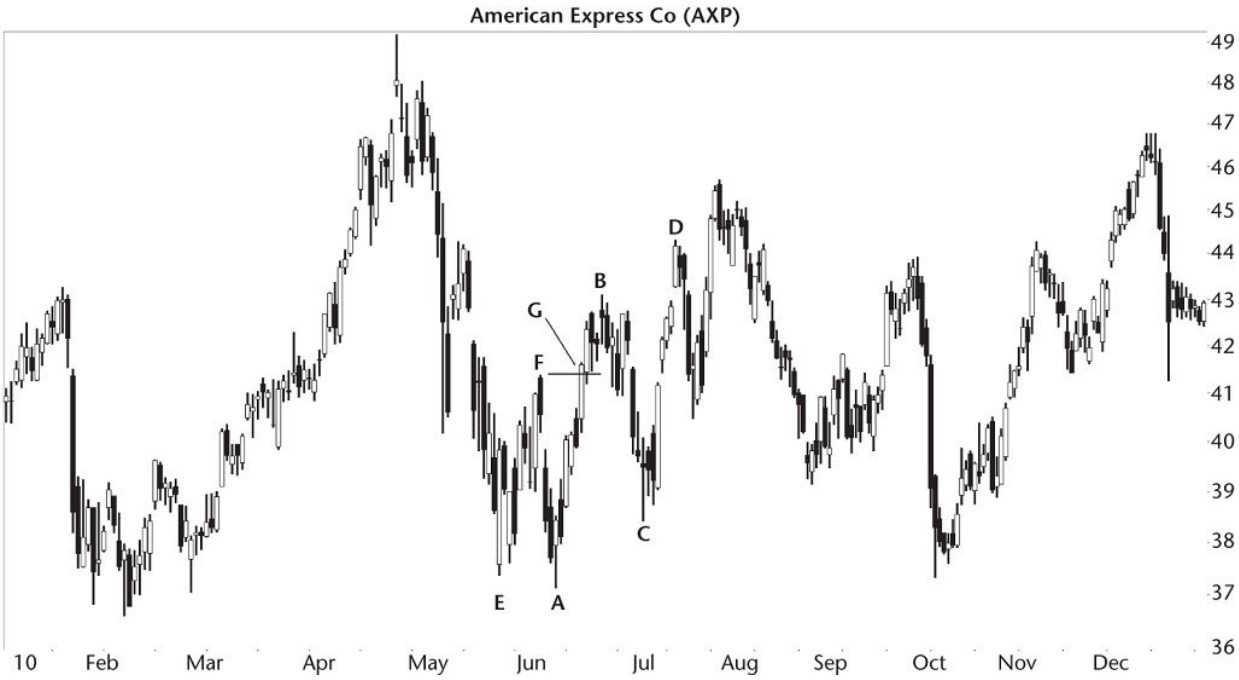


Figure 2.4 Jacob used the bearish AB=CD pattern to exit a trade.

For about a week, the stock cooperated and climbed to B before starting to retrace.

“The throwback and drop to C made me nervous. I started sweating bullets because I thought I'd be stopped out. Don't believe me? The sweat started pouring off me, and the furniture started floating. I'm not kidding. You can see the watermark.” He pointed to a smudge on

the wall. His wide grin made the Grand Canyon look like a small ditch by comparison.

“I thought of selling, but I invariably sell a week or two before the stock bottoms. It's annoying. What helped me this time was when I noticed the bearish AB=CD pattern.”

His software helped by providing the location for him. Let's run through the numbers. The low at point A was 37.13, the high at B was 43.14, and the low of price bar C was 38.42. Crunching the numbers said that the ratio of BC to BA was (43.14 – 38.42)/(43.14 – 37.13) or 78.5%. That was close to the 78.6% Fibonacci number, so the turn matched the identification guidelines (Table 2.1).

If the pattern worked as he hoped, the CD leg would equal or exceed the AB leg and make for a tasty profit.

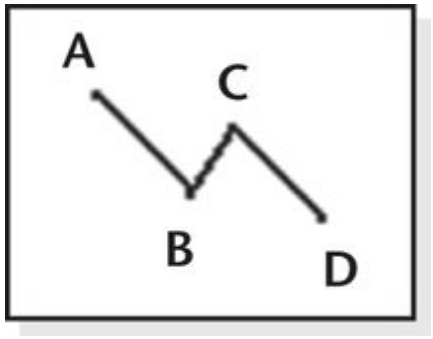
The height of the AB move was 43.14 – 37.13 or 6.01. Added to the low at C (38.42) gave a target for turn D of 44.43.

“I doubled my position right there,” he said and poked the screen, leaving a fingerprint behind. The second buy was near C, and he set a target to sell both positions at 44.43. “I raised my stop, too, to a penny below C. Just in case…”

The stock took off in a straight-line run up to D. The stock sold at the exact high at D, 44.43, cashing him out of the AB=CD trade and also out of the double bottom trade.

“Let's do lunch,” he said. “I'll let you buy.”

3
AB=CD®, Bullish



RESULTS SNAPSHOT

Appearance: A zigzag pattern that has four turns, two of which are governed by Fibonacci ratios.

Upward Moves

	Bull Market	**Bear Market**
Performance rank	4 out of 5	3 out of 5
Breakeven failure rate	11.6%	3.7%
Average rise	38.4%	30.5%
Volume trend	Upward	Upward
Point D reversal rate	38%	33%
How many reach point D?	100%	99%
See also	Bullish bat, bullish butterfly, bullish crab, bullish Gartley, measured move down	

The bullish AB=CD pattern is a type of measured move down except that the pattern's turns are determined by Fibonacci ratios. I

measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The theory behind this pattern is that if you know the first three turns (ABC), you can calculate the fourth turn (D). The method works nearly all of the time, meaning price *does* fall to the calculated point D. However, when price reaches D, it fails to reverse there. Only about a third (33% in bear markets and 38% in bull markets) will see price turn upward when it's supposed to.

Of course, your software for identifying the bullish AB=CD may be different than the model I built, so your performance may vary. Add trading rules to improve performance and you may find this pattern a useful tool. Let's see what this pattern looks like.

Tour

Figure 3.1 shows an example of a bullish AB=CD. Price begins the pattern at peak A after an exhaustion gap warns of the coming retrace. The pattern completes at valley D, with turn BC nestled comfortably between those two points. Notice that price turned at D and climbed from there (at least for a time). Price reversing at D and climbing is how the pattern is supposed to work.

In this example, price broke out of the pattern upward at F when it closed above the top of the pattern. Not shown, but the stock continued higher to rise 119% above the low at D. If only all chart patterns worked like that!

This chart is also a good example of the CD leg meeting the projection of AB. In other words, the height of AB subtracted from C gives turn D. Thus, if you know turns ABC, you can estimate where D will appear. However, you can also use that price information to predict where D will be using Fibonacci numbers (because turn D can be far away from the ABC turns). I'll discuss that in the next section.

Notice volume (E) trends downward in this example. A downward volume trend happens 47% of the time in a bull market (meaning an upward trend is slightly more likely). An *upward* volume trend helps boost performance, and we'll see how much in the Statistics section.

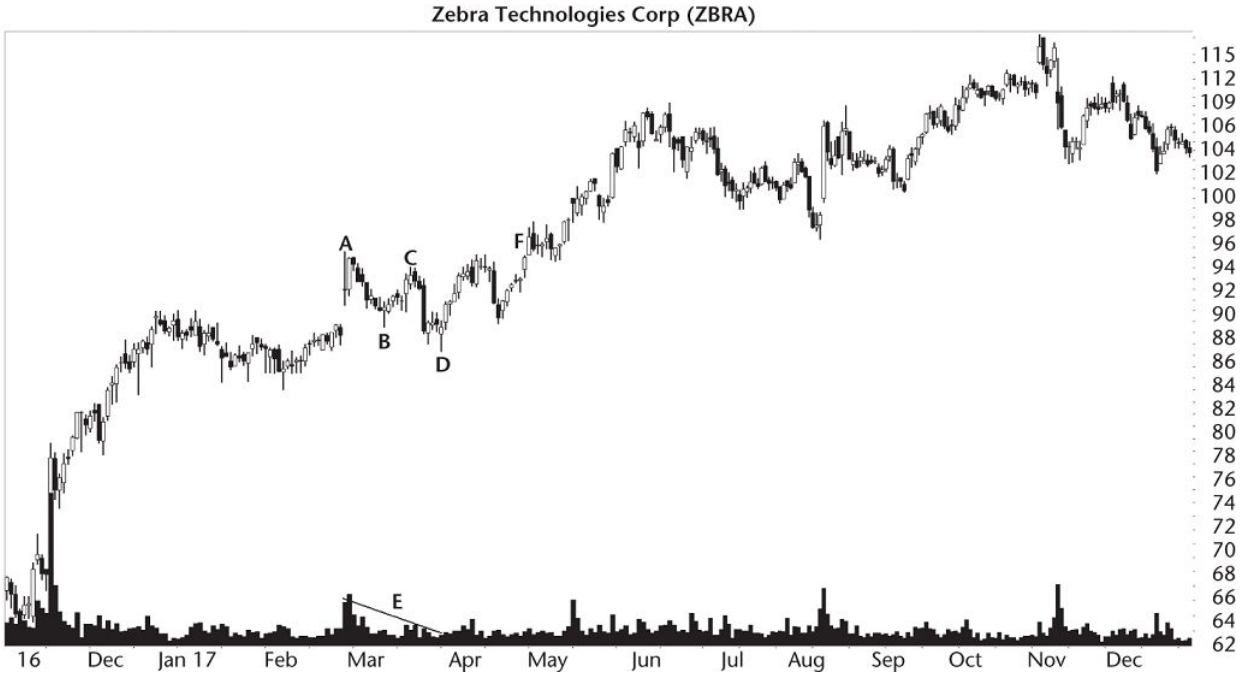


Figure 3.1 This chart shows how a bullish AB=CD pattern sees price turn at D.

Identification Guidelines

Table 3.1 shows the identification guidelines, and **Figure 3.2** shows an example of a bullish AB=CD pattern.

Appearance. Bullish AB=CD patterns are a member of what I call Fibonacci patterns whose turns are set by Fibonacci ratios. I don't suggest you try finding this pattern manually. Rather, use pattern recognition software that can hunt down these patterns like a cat hunts mice. I found so many in my quest to count them that I ran out of fingers and toes and had to limit the number a stock could report.

Table 3.1 Identification Guidelines

Characteristic	Discussion
Appearance	A zigzag pattern that has four turns, two of which are governed by Fibonacci ratios.
CB/AB retrace	The retrace should be one of the Fibonacci numbers: .382, .5, .618, .707, .786, or .886.
CD/CB extension	The extension should be one of the Fibonacci numbers: 1.13, 1.27, 1.41, 1.618, 2, 2.24, 2.618, or 3.14.
Hills and valleys	From A to B, there should be no peak higher than A and no valley lower than B. From B to C, there should be no peak higher than C and no valley lower than B. From C to D, there should be no valley lower than D and no peak higher than C.
Volume	The volume trend provides a slight performance improvement depending on the bull or bear market condition. See Table 3.2.
Duration	Limited to 6 months, but that's an arbitrary value.

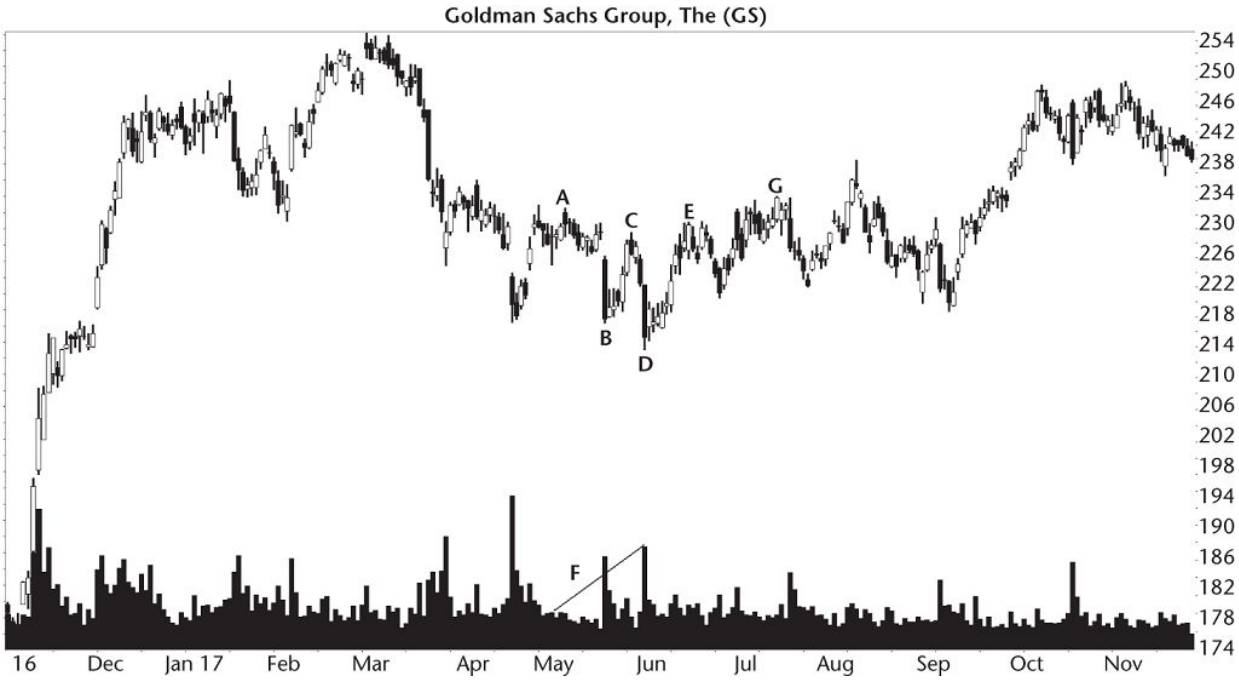


Figure 3.2 Another example of a bullish AB=CD pattern with an upward breakout (when price closes above the top of the pattern).

CB/AB retrace. The BC retrace of AB should be one of the Fibonacci numbers listed in Table 3.1. Let's use the pattern shown in Figure 3.2 as an example of how this works (rather, how I wrote my software to find these patterns).

The high price at A is 228.89, the low at B is 213.12, and the high at C is 225.45. The CB/AB ratio is (225.45 – 213.12)/(228.89 – 213.12) or .782, which is darn close to the .786 number in the table. It qualifies as a proper turn. My software looks for a number within a window .5% of the target numbers listed in the table.

Once you know the ABC turn, you can determine what D should be priced at. In this example D = C – (A – B) or 209.68, which is close to the actual low at D of 209.62.

CD/CB extension. Point D can also be found by the formula C – (C – B)/(Fibonacci number) or 225.45 – (225.45 – 213.12)/.786 in this example. The result is 209.76.

Hills and valleys. The table explains the requirements of peaks and valleys between the various points in the pattern.

Volume. Volume trends upward from points A to D most often, but the trend is almost random.

Duration. I limited patterns to 6 months duration or less. This is an arbitrary limit.

Focus on Failures

Figure 3.3 shows one example of how this pattern fails. The four points in the pattern are labeled as ABCD, and they comprise the bullish AB=CD pattern. Volume slopes upward in this example, shown by the diagonal line at E.

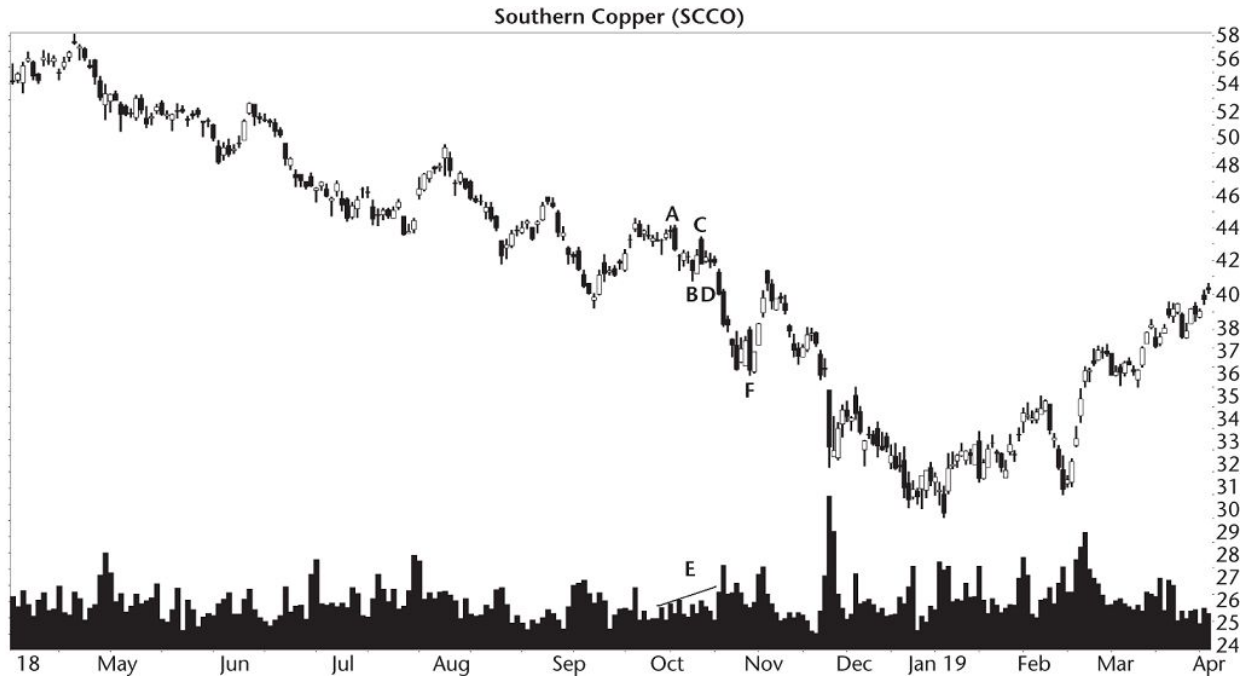


Figure 3.3 This bullish AB=CD has price falling through the predicted turning at D.

Point D is where the stock is supposed to bottom and turn upward, but it doesn't. It's obvious that the height of CF is much taller than AB, but the height can vary depending on the Fibonacci numbers used in construction of the pattern. The turn at D should be at 40.05, and yet the stock continues lower.

This type of failure happens often, 62% of the time in bull markets and 67% of the time in bear markets. Let me also say that this high failure rate may be due to the model I used. Your software may find patterns that perform better than the ones I found.

Another way the pattern fails is if the stock doesn't make it down to D. It turns before the predicted target, leaving you waiting to buy the stock with a fist full of money. Fortunately, this type of failure is exceedingly rare.

Finally, the pattern can also fail if it *does* make it down to D and it *does* turn at D, but the rise isn't high enough to make money. These types of failures are what I call 5% failures and describe them in Table 3.2 as the breakeven failure rate. Let's check the statistics to see what we can learn about this pattern.

Statistics

Table 3.2 shows the first batch of statistics for the bullish AB=CD.

Number found. I found over 2,300 patterns, sorted by market condition, in 1,069 stocks from July 1991 to February 2020. I told my program to limit the number found so it didn't overload my spreadsheet. Not all stocks covered the entire period, and some no longer trade.

Breakeven failure rate. The failure rate (a measure of how many patterns failed to see price climb more than 5%) is quite good, averaging between 3% and 12% of those patterns that reached D and reversed there. To put it another way, if you were to trade a lot of these patterns perfectly, you'd have an 88% chance of seeing price rise more than 5% above the low at D. That's terrific.

Average rise after D. I measured the average rise from the low at D for those patterns reaching D and turning upward. The average rise is disappointing. Non-Fibonacci-based patterns in bull markets perform better, averaging 42.4%. However, bear markets beat non-Fib patterns with the rise averaging 30.5% compared to 28.1%, respectively.

Table 3.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,741	565
Breakeven failure rate	11.6%	3.7%
Average rise after D	38.4%	30.5%
Volume trend	53% Upward	57% Upward
Performance Up/Down volume	40%U, 37%D	33%U, 27%D

Volume trend, performance. Volume trends upward slightly more often than downward, as the table shows. You can improve performance by looking at the volume trend. I used linear regression to determine if volume was trending upward or downward from the start to end of the pattern (A to D). Often you can just look at volume to see the trend.

Both markets see an improvement in performance if volume trends higher. To put it another way, a downward volume trend hurts performance.

Trading Tactics

Imagine if you found a pattern that could predict when the stock is going to turn. That's what I had hoped for this pattern. Once you know that the stock had bottomed, you could buy and ride it higher.

Does the stock really turn when it's supposed to and how high does the stock rise? Let's find out. **Table 3.3** shows statistics regarding the behavior of price after the pattern ends.

How often does price reach or exceed D? If you use the pattern to predict turn D, then price will hit the target nearly all of the time. The 100% hit rate in bull markets is a round-off thing. I found three patterns out of 1,741 where the stock failed to drop down to the calculated D. So it does fail to reach D, but it's very rare. That's the good news (it reaches D).

Table 3.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price reach or exceed D?	100%	99%
How often does price turn at D?	38%	33%
How often does D appear within a week of calculated time?	50%	47%
How many rise to point A?	40%	22%
How many rise to point B?	83%	80%
How many rise to point C?	47%	33%

How often does price turn at D? Here's where the pattern stumbles. For those stocks dropping to D, only about a third will turn when they are supposed to. Figure 3.3 shows an example of this when price ignores D and continues lower to bottom at F.

How often does D appear within a week of calculated time? Using the first three turns to predict the *time* when turn D will appear works about half the time. It could be better, but sometimes having a clue when something will happen can improve your trading. Use this idea just like I explain with price in the Identification Guidelines. That is, find the ratio between the time to move from B to C compared

to the time to move from A to B. Point D should appear following the formula, (C – B)/Ratio + C, where ratio is the number you just found.

I'll discuss an example of this in the Sample Trade.

How many rise to...? For those patterns seeing price drop to D and turn upward, how far does price rise? The answer to that question is vital for swing traders.

I used the pattern's turns to gauge success. Point B is closest to turn D, and we see price climb that far 83% of the time in bull markets. That's very good.

Use A, which is at the top of the pattern, and we see that price makes it up that far less than half the time (40%).

Hopefully you can use the information in these tables to help improve trading results using Fibonacci-based patterns.

Sample Trade

Figure 3.4 shows a trade George made. His computer program found the AB=CD pattern on the way down to D. Let's go through his buy decision.

The pattern appears at turns ABCD on the chart. The high at point A is 6.65, the low at B is 5.81, for a height of 84 cents. Subtracting the height from the high at C (6.55) gives a calculated turn D of 5.71. The high–low range at D is 5.94–5.59. It's the first point where the stock drops below the target, and it accurately marks the turn. So that becomes point D.

Let's see if we can predict *when* the stock will reach D. Point A is 9 November 2009, B is at 8 December, and C turns at 16 December. The ratio of CB/BA is 8/29 or .28. That's the ratio between the two legs.

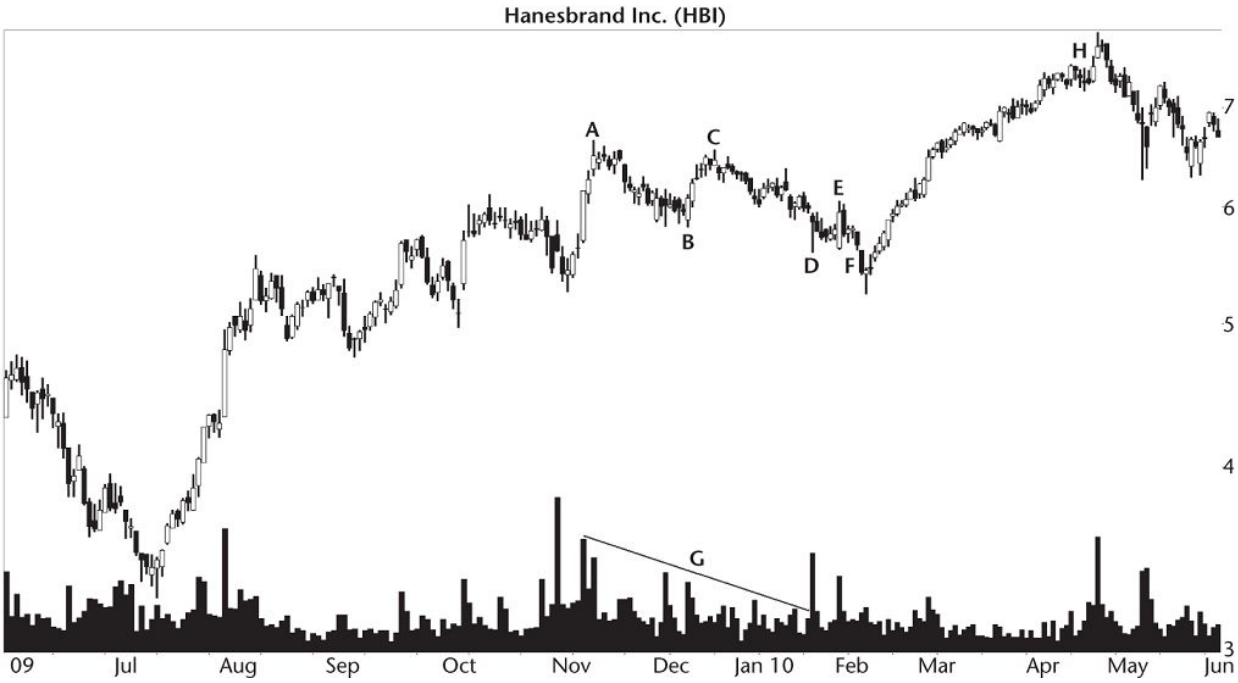


Figure 3.4 George took a loss buying this AB=CD.

For point D, we use the formula D = (C – B)/Ratio + C or (8)/.28 + (16 December 2009). Turn D is predicted to appear on 14 January 2010. In this example, turn D appeared on 20 January, and that's within a week of the predicted time. I consider that a good prediction.

Volume sloped downward as line G shows. Even though volume slopes upward most of the time in an AB=CD pattern, the direction is nearly random (53%). He made this trade in a bull market (the bear market ended in early 2009), and Table 3.2 says a falling volume trend penalizes performance, but only by about a percentage point (dropping from 38.4% to 37%).

He used the traditional measure rule for chart patterns to estimate how far price would climb if the pattern broke out upward. The height of the pattern is A – D (6.65 – 5.59) or 1.06, so the target would be 1.06 + 6.65 or 7.71, which is the height added to the high at point A. A downward breakout would be D – 1.06 or 4.53 (or 19% lower).

“When the stock made a strong push upward at E,” he told me, “I bought at the open the next day and received a fill at 6.02. And I just ate breakfast, too.” He grinned.

I scratched my head.

“The stock filled…ate breakfast. Get it?”

I exhaled, rolled my eyes, but said nothing. With a calculated rise to 7.71, he was looking at a potential gain of 18%. “That sounds reasonable,” he said.

For grins, he calculated a new target based on half the height (1.06/2 or .53 added to the high at A) or 7.18. If he sold at the closer target, he'd make 9%.

“Let's look at the historical chart.” He punched keys on his computer and pulled up a chart from 2007. “Overhead resistance here,” he pointed and swept his finger across the screen. Price moved horizontally for a year. “Looks like a cloudbank pattern,” before the bear market started and sucked the stock down. If the stock worked as he hoped, it would have to traverse through that resistance to reach the full height target. “Am I asking too much for price to rise that far?”

A check of Table 3.3 didn't set well with him. With just 38% of patterns showing a reversal at D, he decided to place a tight stop a penny below the low at D (5.59 – .01 or 5.58).

“The trade went bad right from the start. The day I bought, the stock closed lower, almost reversing the move up at price bar E. Four days

later," he pointed to F, "the stock hit my stop and cashed me out at 5.58 for a loss of 7%. That's *one* day before it bottomed."

The day after he was stopped out, the stock began a rebound that carried the stock up to the full-height target, 7.71, shown on the chart as point H.

Looking back at the trade, the AB=CD pattern found point D accurately and on time (within a week of the prediction), but the stock broke out downward (at F), not upward. It busted the downward breakout when it closed above the top of the pattern (above A) and continued higher to reach the full-height target (H).

4
Bat®, Bearish

RESULTS SNAPSHOT

Appearance: Looks like a big W with turns located by Fibonacci ratios.

Downward Moves

	Bull Market	**Bear Market**
Performance rank	1 (best) out of 5	4 out of 5
Breakeven failure rate	17.7%	4.5%
Average drop	–14.3%	–20.2%
Volume trend	Downward	Downward
Point D reversal rate	86%	86%
See also	Big W, bearish crab, bearish butterfly, double bottoms (all types), and bearish Gartley	

Every time I see a bearish bat pattern, my first thought is it's a Big W chart pattern. It's as if the Big W was computerized and the developer used Fibonacci ratios to determine the turning points. The bat pattern joins other Fibonacci-based patterns: AB=CD, butterfly, crab, and Gartley.

I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an upward or downward breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The above Results Snapshot gauges the downward move after the pattern ends. The stocks I looked at saw price turn lower 86% of the time after reaching point D. That percentage is not good but great!

The average decline in bull markets is a hair over 14%. The breakeven failure rate isn't too bad, at 17.7%. That means an average of almost 18% of the bearish bats will fail to see price drop more than 5% below the high at D (end of the pattern).

All of this may be confusing unless you can see what a typical bat pattern looks like. So let's take a quick tour.

Tour

Figure 4.1 shows an example of a bearish bat. The pattern begins at X, which is any significant turn. The locations of points A and B follow, but their placement is determined by one of two Fibonacci numbers. Once points XAB are found, the search for C can begin using one of six Fibonacci numbers. Following that, if you're lucky, D will appear close to one of four Fibonacci numbers. One last number, .886, helps validate the pattern. All of that gibberish means this pattern is complicated, and that makes it rare.

If you're handy with a slide rule (remember those?), then you'll be wasting your time searching for a bat. Even using a fancy electronic calculator will take too much time to find a bat. Use a computer with pattern-finding software. I have a free one on my website called Patternz which will find this pattern and dozens of others. Try using it if you're serious about finding bats.

Even for a bearish bat, this example looks weird because of the uneven bottoms (A and C). Volume trends upward (E) when Table 4.2 says the average pattern shows a downward trend. As bad as this bat looks, it performs exceedingly well, with price dropping to F. This bearish bat is indeed bearish.

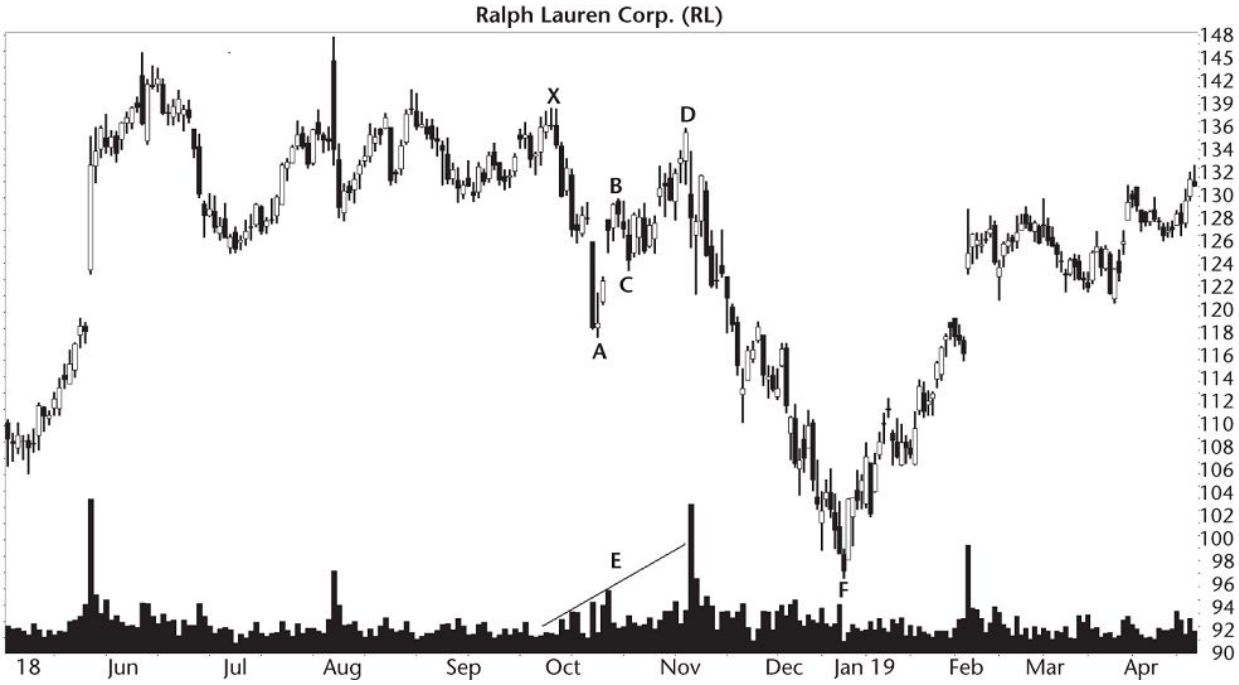


Figure 4.1 The five turns, X, A, B, C, and D, complete the bearish bat.

A swing trader taking a position just after D forms and watching the stock go all the way down to F might start dreaming about bats. Maybe even build some bat houses and hang them on his (or her) property. Here's a hint: a nearby pond is a plus. Let's return to trading bats. First, we have to find them.

Identification Guidelines

Table 4.1 shows identification guidelines. The guidelines are similar to other Fibonacci-based patterns except the turns may use different numbers.

Figure 4.2 shows another example of a bearish bat.

Table 4.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big W with turns located by Fibonacci ratios.
BA/XA retrace	The ratio of BA/XA is either .382 or .5
BC/BA retrace	The ratio of BC/BA is one of .382, .5, .618, .707, .786, or .886
DC/BC extension	The extension of leg DC to BC is one of the Fibonacci numbers: 1.618, 2, 2.24, or 2.618.
DA/XA retrace	The ratio of DA to XA is .886.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

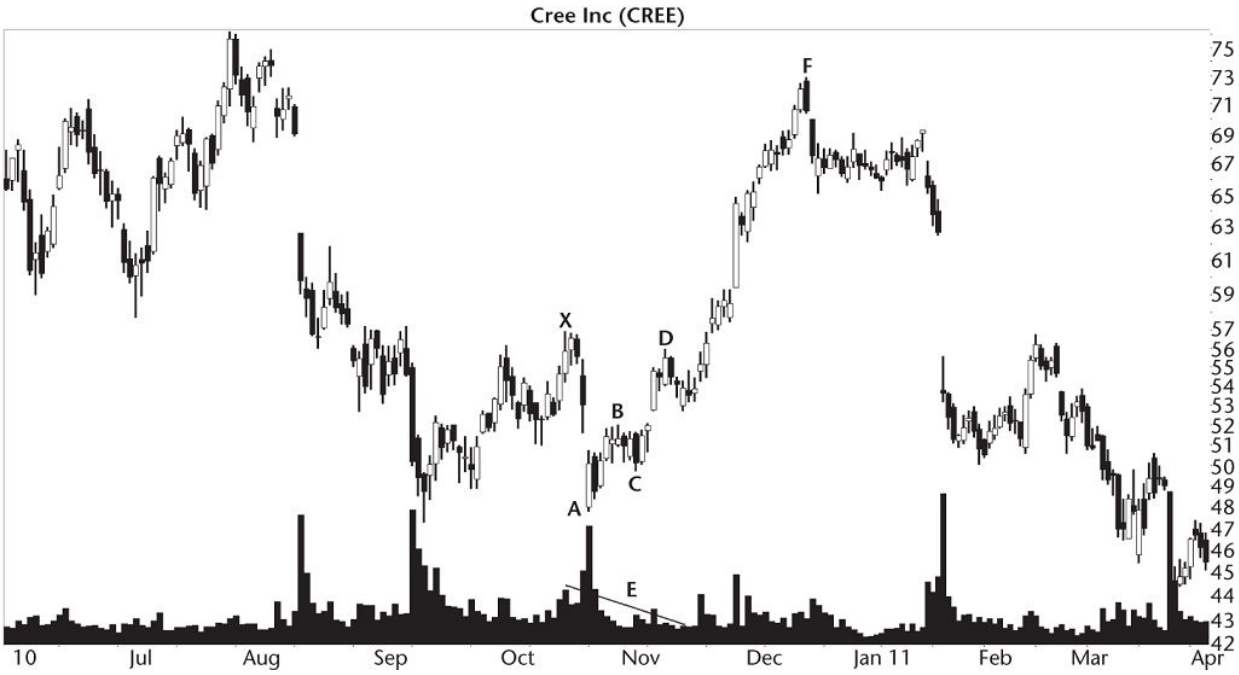


Figure 4.2 This bearish bat sees price dip after D but still breaks out upward.

Appearance. My guess is that the name comes from the picture which forms when you connect turns XABCD with lines, but also includes lines connecting XB and BD. The pattern looks like two wings. When trying to visualize this, consumption of alcohol may be a plus.

As I mentioned, the pattern's turns are found using Fibonacci numbers. Let's go through this pattern to see how the bat in Figure 4.2 qualifies.

BA/XA retrace. The ratio of leg BA to XA should be either .382 or .5. Here are the prices used in the retrace or extension calculations for the bearish bat. The high price of point X is 56.93. The low at point A is 47.81, B peaks at 52.00, C bottoms at 49.71, and the pattern ends at D with a high price of 55.98.

To determine the retrace, I use the height (high–low range) of the price bar at the target to determine whether or not it spans a Fibonacci number. For example, the BA/XA turn using the high price of B would be (52.00 – 47.81)/(56.93 – 47.81) or .46. Using the low price at B (50.90) in the equation gives (50.90 – 47.81)/(56.93 –

47.81) or .34. The range .34 to .46 straddles the .382 Fibonacci number, so I allow it as a valid XAB turn.

Using this method gives a lot of leeway to the pattern's turns but even so, the pattern is rare. Trying to narrow the turn window would limit even more patterns from being found, so this is the algorithm I chose. The software you use may think differently.

BC/BA retrace. In a manner similar to the BA/XA retrace, I plugged in the numbers for the BC/BA retrace (using the low at C). They are (52 – 49.71)/(52 – 47.81) or .55. Using the high at C (51.65) gives (52 – 51.65)/(52 – 47.81) or .08. The range of .08 to .55 encompasses .382 and .5, so I allow the turn as valid.

DC/BC extension. In a similar manner, I find the DC extension of BC. That's (55.98 – 49.71)/(52 – 49.71) or 2.74. Using the low at D (54), we get an extension of 1.87. The 1.87 to 2.74 values straddle all of the listed numbers (any one of which will suffice) except 1.618, so it qualifies as a valid extension.

DA/XA retrace. Supposedly, this ratio is critical, so I allow point D to miss the number by 3% (.03). I do *not* use the high–low range of D in the equation and I use 3% instead of 1% because this pattern is rare enough as it is. We have (55.98 – 47.81)/(56.93 – 56.93) or .9. The .9 value is near the .886 target, so the pattern qualifies as a valid bearish bat.

As you can imagine, computing these ratios by hand is tedious and error prone, so I programmed my computer to find bats by first finding all peaks and valleys and then using the method described to glue them together.

Volume. I'll discuss a few volume statistics in Table 4.2, but volume trends downward in the pattern most of the time. With few samples, it's difficult to say whether up or down trending volume leads to better or worse performance, but current statistics favor a downward volume trend for the best performance.

Duration. I limited patterns to a length of 6 months or less. That's an arbitrary limitation.

Table 4.2 General Statistics

Description	Bull Market	Bear Market
Number found	537	128
Breakeven failure rate	17.7%	4.5%
Average decline after D	–14.3%	–20.2%
Volume trend	74% Downward	67% Downward
Performance Up/Down volume	–14%U, –15%D	–20%U, –20%D

Focus on Failures

Figure 4.3 shows a failure of a bearish bat pattern. Why is it a failure? As the name implies (*bearish* bat, not bullish), price should drop after point D (meaning price should trend lower after the pattern ends). However, price continues trending higher in this example. Price closes above the top of the pattern (X) at point E, posting an upward breakout.

I checked the statistics and found that 70% of the 665 bats I looked at break out upward, regardless of the market condition (bull or bear). Don't let that number give you nightmares. As awful as the 70% number is, it doesn't tell the complete story. Swing traders will soon learn (as discussed in Table 4.2) that price turns lower at point D 86% of the time. Price may still break out upward, as Figure 4.3 shows, but maybe you can make money when price drops between D and the breakout.

Figure 4.3 This bearish bat isn't bearish at all.

I don't show this situation in Figure 4.3, but if price *does* turn lower at D but drops less than or equal to 5%, then that's also a failure. If you were to trade a pattern with a 5% failure, you'd be hard pressed to make money. The 5% failure rate (also called the breakeven failure

rate) is 17.7% for this pattern in bull markets (but just 4.5% in bear markets).

Since I'm throwing around a lot of numbers, let's discuss statistics.

Statistics

Table 4.2 shows general statistics related to the bearish bat pattern.

Number found. Despite using the high–low price range at most of the Fibonacci turns, as I discussed in the Identification Guidelines, few bats appear in the historical price record. I found them in 491 stocks despite searching from June 1991 to August 2019. Not all stocks covered the entire period and some no longer trade.

Breakeven failure rate. I counted the number of patterns which saw price drop no more than 5% after peaking at D (using the high price at D to the ultimate low). The table shows the failure rate. Anything above zero is too high, but that's in an ideal world. The bear market failure rate, at 4.5%, is terrific. The 17.7% failure rate in bull markets is not so terrific.

When you consider that a declining price trend in *bull* markets is like swimming against the current, you would expect a high failure rate. Swim with the bear market current and the failure rate drops to one-fourth the bull market rate.

Average decline after D. Point D ends the pattern and price is supposed to head lower. The average decline is 14.3% in bull markets but substantially better in bear markets, over 20%.

Volume trend, performance. I measured the volume trend using linear regression but often you can tell the trend just by looking at the chart. Figure 4.2, for example, shows volume (E) higher on the left half of the pattern than the right half, so the trend is downward. In fact, the average bearish bat will have a downward volume trend at least most of the time.

Does the volume trend give us any hint of better or worse performance? Not that you'd notice. The widest spread between the two numbers is one percentage point in bull markets. That's probably not statistically significant.

Trading Tactics

The real purpose of the bearish bat is for swing traders to predict the turn at D and then go short, anticipating a drop to the bottom of the pattern. Will price sink that far? Maybe, maybe not. Let's look at some number to see if we can model behavior better.

Table 4.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	86%	86%
How many drop to point A?	35%	38%
How many drop to point B?	81%	80%
How many drop to point C?	48%	46%

Table 4.3 uses numbers to show how price behaves after the pattern completes at D.

How often does price turn at D? At the end of the pattern, price can form a minor high at D or price can continue trending upward (as in a straight-line run up). Most of the time (86%), the stock will form a minor high at D. To find the reversal rate, I checked for a minor high appearing there (that is, I checked to see if price actually turned lower). Figure 4.3 shows an example where the stock failed to turn significantly lower at D.

How many drop to...? This measures the drop after D but uses the pattern's turns as targets. For example, I found that in bull markets, the stock reached turn B 81% of the time. Turn B is the closest turn below D, so it should, and does, have the highest hit rate in the table.

At the bottom of the pattern is point A. Price reaches A just over a third of the time.

You can use these findings to help calculate where your stock might turn. Because you're dealing with probabilities, anything can happen.

Sample Trade

Figure 4.4 shows how Pete used a bearish bat. He bought the stock when it broke out to a new high, at E (the highest price bar on the chart). “Don't laugh,” he told me. “How many of these zingers have you got caught in?”

I didn't say a word, but blushed instead. Many years ago I bought a stock and watched it more than double. Wonderful! But I felt it had more to give so I held on. It lost all of its gains, dropped in half, and I sold near the low. Oops. Then it recovered. Of course it recovered with me watching from the sidelines.

So I know how Pete feels. Maybe you do, too. As traders, we all make mistakes. And that's the beauty of experience. It allows you to recognize a mistake when you make it again.

Pete believed in the company and had profited over the years by holding onto the stock. He checked in every few weeks and saw price continuing to move lower. The decline didn't bother Pete. Why?

“Because it's a chance to buy the stock at a lower price. Like it's on sale.”

Figure 4.4 Pete bought near the high and made a quick swing trade after D.

He made a fortune using the buy-the-dip method to trade stocks (that is, buy when price makes a significant dip). The problem with that logic is that the stock has to recover. “I have faith,” he said and pulled out a cross draped on a necklace strung around his neck. He kissed the cross and then tucked it back under his shirt.

Pete's computer alerted him to the bearish bat pattern which formed as labeled on the chart (XABCD).

With additional shares, he decided to trade the throwback (which didn't occur in this pattern). He set a buy order to grab 1,000 shares a penny above X (not D) or 159.37. The stock gapped open higher (breakaway gap) and he received a fill at the open at F, at 163.25.

He used a limit order to sell his 1,000 shares at 5% above X, or 167.34.

The next day, the order filled. He made just over $4,000 in two days. Of course, if he'd held onto the shares and sold at the ultimate high in late January 2020 at 327.85, he would have double his money. That's for a perfect trade, of course.

If he'd held during the Covid-19 bear market and sold at the late March 2020 low, he'd still pocket almost $50,000.

5
Bat®, Bullish

RESULTS SNAPSHOT

Appearance: Looks like a big M with turns located by Fibonacci ratios.

Upward Moves

	Bull Market
Performance rank	1 (best) out of 5
Breakeven failure rate	10.2%
Average rise	44.3%
Volume trend	Downward
Point D reversal rate	91%
See also	Big M, double tops, bullish AB=CD, bullish crab, bullish butterfly, and bullish Gartley

The bullish bat is a Big M chart pattern except that Fibonacci ratios determine the turning points. I don't show bear market statistics in this chapter because I found just 53 patterns. That's too few to be worth discussing, especially when sorted into different categories.

I found 259 bullish bats in the data I searched. That's too few to be comfortable drawing conclusions, but let's live dangerously, shall we?

I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The Results Snapshot (previous page) shows the average rise from the low at turn D is 44.3%, which is quite good. That beats the 42.4% average gain for non-Fibonacci-based patterns. Failures, at about 10% of patterns, are also quite good. They are well below the 15.3% failure rate for non-Fibonacci patterns.

Swing traders will want to buy long at turn D. Price turns upward at D 91% of the time in the bats I looked at. That's sensational. It's a headline performance.

The performance rank, which is based on the average rise from point D when compared to other Fibonacci patterns, is first out of five. It's the best performing Fibonacci pattern. The performance rank of bear market patterns (not shown) is also first (best), out of five contenders.

Tour

Figure 5.1 shows what a bullish bat pattern looks like, one that performs better than expected. The pattern has five turning points, cleverly labeled X, A, B, C, and D. Why is X labeled as the first turning point? I haven't a clue, I'm too lazy to find out, and that's the convention. So that's what I use.

In Figure 5.1, the bat appeared when price formed a second bottom at X, mirroring the valley in October. Price recovered to the top of a trading range setup by prior peaks (and valleys) and hit turn A, the top of the pattern. Price found overhead resistance there that it couldn't overcome. So price retraced in an ABC-type consolidation (that is, a drop to B, upward retrace to C, and drop to D). The stock broke out upward at F when price closed above the top of the pattern, pushed through a ceiling of resistance, and soared.

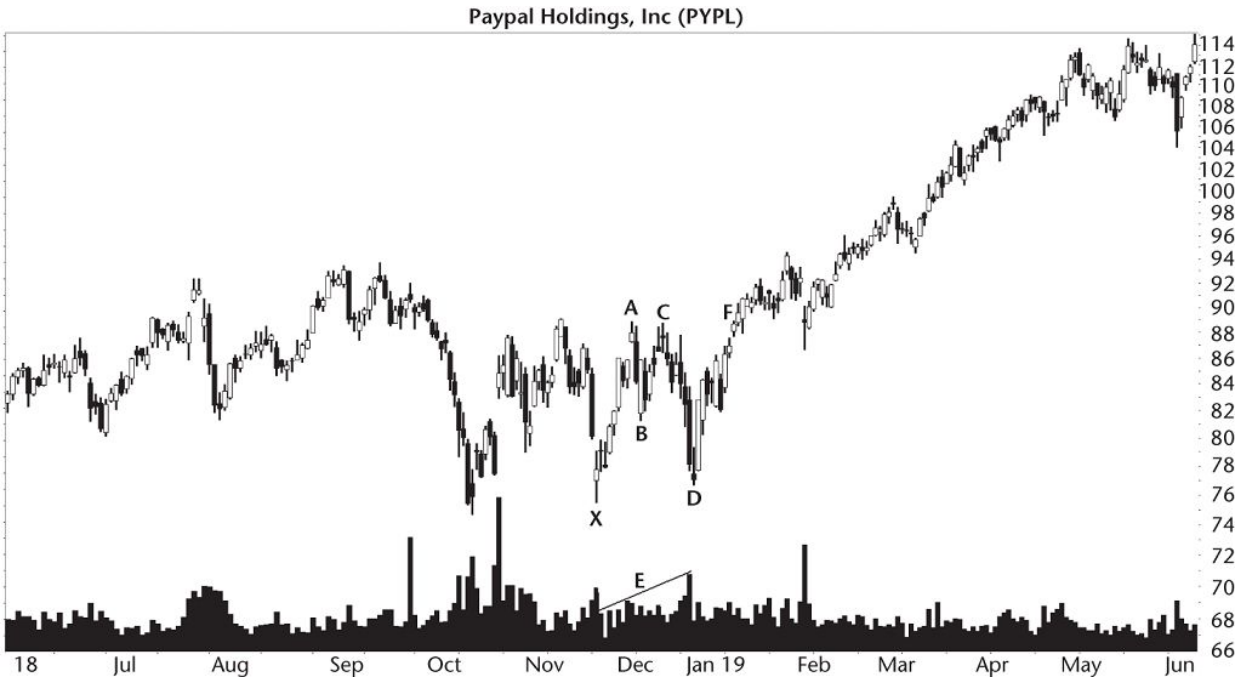


Figure 5.1 This bullish bat breaks out upward (at F) and makes a strong push higher.

Volume trended upward, which I show at E. This is one of the few bats to show an upward volume trend. Based on the average, bats with an upward volume trend tend to underperform. I will discuss statistics later in this chapter.

Identification Guidelines

Table 5.1 shows the identification guidelines for the bullish bat. Use **Figure 5.2** as a reference. If you don't have a computer that can find these patterns, give up now. Go search for a Big M or double top instead. They are easier to find because you don't have to do any calculation. Plus, bats are as rare as Klingons on Vulcan (or so I assume. I haven't visited there recently).

Figure 5.2 shows a bullish bat at turns XABCD. This one sees price climb after D, but breaks out downward, at E.

Appearance. If you draw lines connecting turns XAB (and back to X), and connect BCD (and back to B), you'll notice that the two halves form a set of wings. Imagine a body at B and it'll resemble a bat (or butterfly or birds or lots of other flying creatures, I think). But this pattern is called a bullish bat, so that's the story I'm sticking with.

Without the lines, the pattern looks like a big M chart pattern or even a double top with tall sides. The difference between the bullish bat and those other patterns is the use of Fibonacci ratios to determine the turning points, so let's discuss that next.

AB/AX retrace. Let me give an example of how to find the various points. Points X and A are arbitrary minor low and high points, respectively. Minor low B is an important one. The ratio of leg AB to AX should be either .382 or .5. Because the pattern is so complicated, the rules determining valid ones limit the numbers you will find in the real world. So I used the high–low price range of one of the points in the ratio. If a Fibonacci number is within the high–low range, then it's allowed as a valid turning point.

Table 5.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big M with turns located by Fibonacci ratios.
AB/AX retrace	The ratio of AB/AX is either .382 or .5
CB/AB retrace	The ratio of CB/AB is one of .382, .5, .618, .707, .786, or .886
CD/CB extension	The extension of leg CD to CB is one of the Fibonacci numbers: 1.618, 2, 2.24, or 2.618.
AD/AX retrace	The ratio of AD to AX is .886.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for many chart patterns.

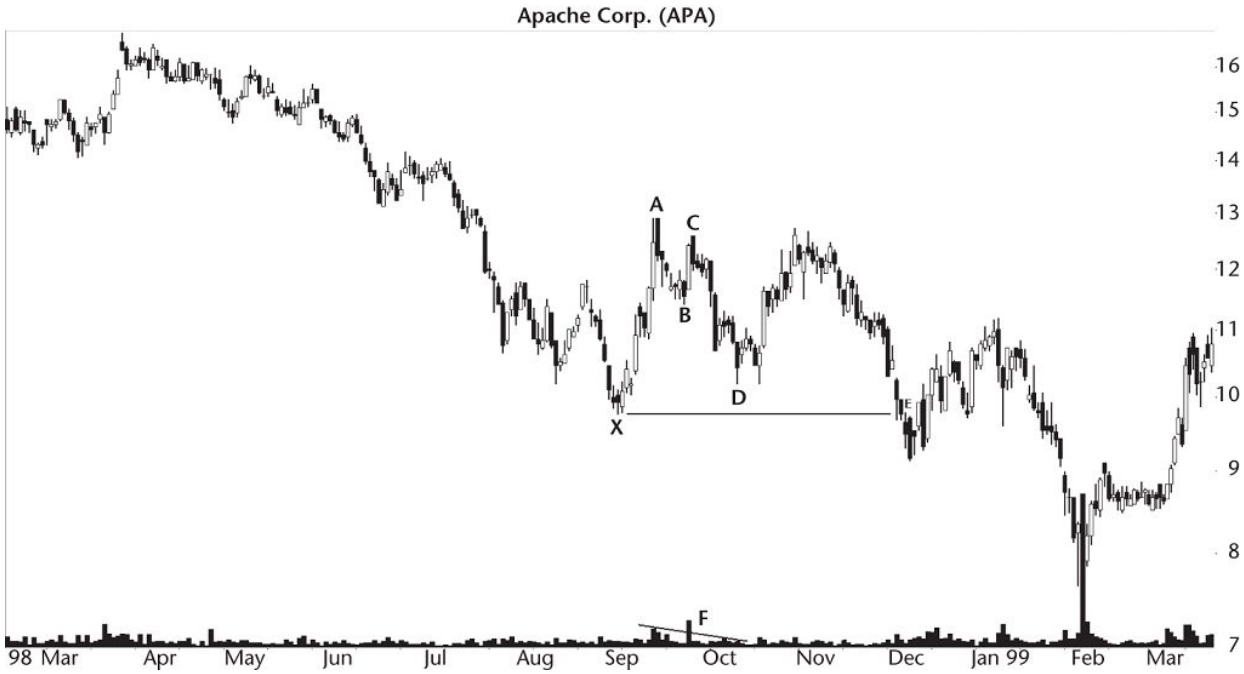


Figure 5.2 This bullish bat rises after point D, but breaks out downward at E.

For example, the low at point X is 9.76. The high at A is 12.90, and the high–low range at B is 11.81 – 11.40. The AB/AX ratio using the high at B would be (12.90 – 11.81)/(12.90 – 9.76) or .35. Using the low

price at B would give (12.90 – 11.40)/(12.90 – 9.76) or .48. The .382 number nestles comfortably between .35 and .48, so XAB is a valid turn.

CB/AB retrace. In a similar manner, I use the high at A, low at B, and high–low range at C (12.57 to 11.98) to qualify the CB/AB retrace. Plugging in the numbers we get a range of .39 to .78. That range must encompass one of the numbers listed in the table, and it does. In fact, several of the numbers listed fall within that range. Although such a large range might seem like the recognition rules are lax, only a few patterns qualify. Let's continue with the CD extension.

CD/CB extension. CD is longer than CB, so we call that an extension and not a retrace. Let's go through the math for this one. It follows the same rules as before. I use the low at B, high at C, and the high–low range at D to qualify the three points. D is at 10.81 to 10.19. Plugging them into the equation, we get (12.57 – 10.81)/(12.57 – 11.40) or 1.50 using the high at D. The low at D becomes: (12.57 – 10.19)/(12.57 – 11.40) or 2.03. Two numbers fit that range: 1.618 and 2, so the turn qualifies.

AD/AX retrace. For the last turn of the bat, I don't use the high–low range. Rather, the number must be within .03 of the target .886 value (using the low at D only). So we get (12.90 – 10.19)/(12.90 – 9.76) or .86, which is within .03 of the .886 target. This pattern qualifies as a valid bullish bat, but your software may use a different algorithm and find a different result.

Volume. The bullish bat doesn't have a volume requirement. Rather, you'll see volume recede from point X to D (the width of the pattern) most of the time. I'll discuss volume in the Statistics section. Point F in the figure shows a downward volume trend.

Duration. There are no rules limiting the width of the pattern, but I limited them to six months.

Focus on Failures

Figure 5.3 shows a bullish bat that fails to be bullish. I show the five turns at XABCD. It's a valid bullish bat even though it looks weird. Price at D should see the stock turn higher, but it doesn't. It *does* form a minor low, but that doesn't translate into any meaningful rebound in the stock.

Instead of turning upward at D, the stock continues lower, breaking out downward at E. Price continuing lower at D (instead of turning upward) is the first type of failure.

The second type of failure is when price *does* turn upward at D, but doesn't climb far. I consider a move no more than 5% to be a failure. Figure 5.3 shows this type of failure, too, because price climbs just 3% after D.

Five percent failures only happen about 10% of the time, so they are a concern, but not a huge one.

Let's talk about statistics next.

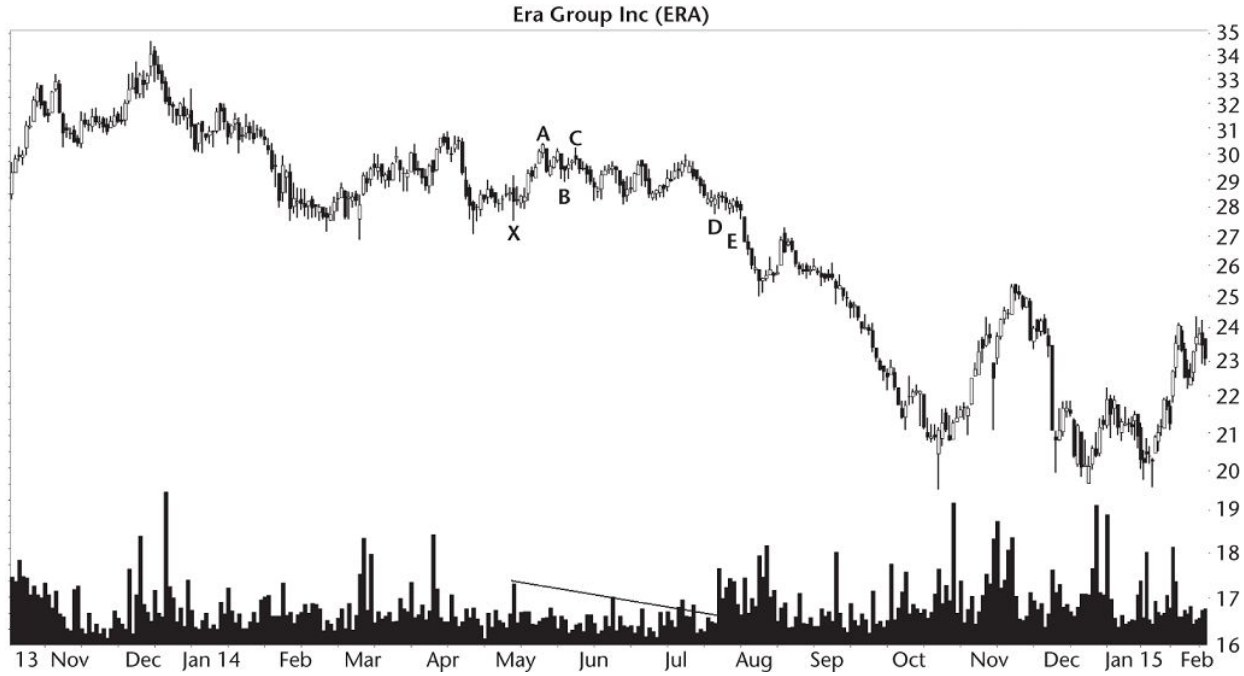


Figure 5.3 This bullish bat isn't bullish at all. Price fails to turn higher at D and breaks out downward from the pattern.

Table 5.2 General Statistics

Description	Bull Market
Number found	259
Breakeven failure rate	10.2%
Average rise after D	44.3%
Volume trend	80% Downward
Performance Up/Down volume	35%U, 47%D

Statistics

Table 5.2 shows a few general statistics for the bullish bat.

Number found. This complicated pattern is rare, but it could be the result of the way I programmed my computer to find them. I unearthed bats (in both bull and bear markets) in only 260 stocks despite searching over 1,300 stocks. Patterns found in the stocks stretched from July 1991 to April 2019. There were so few patterns that I limited the presentation to bull markets only, as I mentioned.

Breakeven failure rate. The breakeven failure rate is a measure of how often patterns fail to rise more than 5% (as measured from the low at D). With such a high average rise (44.3%), you might expect to see a low failure rate. Indeed, that's what the pattern shows, at 10.2%.

Average rise after D. The average rise measures from the low at point D. The 44.3% rate compares favorably to the 42.4% average rise from non-Fibonacci-based patterns.

Volume trend, performance. Volume trends lower 80% of the time as measured from the start of the pattern to the end using linear regression. Performance is best if the trend is downward (with rises averaging 47%!).

However, don't let the wide difference (35% and 47%) between the two values fool you. I found just 27 samples with upward volume trends, which is probably why the 35% gain is so tiny. The difference between the two values will shrink with more samples.

Trading Tactics

Are you a swinger? Swing trader, that is. If so, then the following table is just for you. With this pattern, you can use your software to calculate at what price D would need to appear to complete the bat. Then you can wait to see if it appears.

If it does, then consider buying the stock and riding price higher. But how often does the stock turn upward at D, and how far up does price rise? Those are important questions any swing trader wants to know. Here's what I found out.

Table 5.3 Price Move after Pattern End

Description	Bull Market
How often does price turn at D?	91%
How many rise to point A?	58%
How many rise to point B?	86%
How many rise to point C?	64%

Table 5.3 shows how price behaves after point D.

How often does price turn at D? I found price turning upward at D 91% of the time, which is wonderful. It's exciting. Swing traders will be delighted when I share the news, I'm sure.

How many rise to...? Gauging performance using another method, I checked how often price climbed to the various turns in the pattern.

For example, the closest turn to D is B. I found that price climbed to B 86% of the time. At the top of the pattern is point A. How many climbed to A? Answer: 58%.

Even though just over half of bats saw price reach A, with an average rise of 44%, it's clear many bats see price rise substantially to overcome the stinkers trying to pull the results down.

Hopefully, you can use these numbers as guidance to help you trade this pattern better by estimating how far price might rise.

Sample Trade

Figure 5.4 shows a sample trade that Scott made. Scott has been a longtime admirer of Apple products, so when his software flagged a bullish bat, he took an interest in the stock. I show the bat as turns XABCD.

“I measured the height of the pattern,” he said and pointed to the chart. From the peak at A (60.96) to the low at X (50.61), the height was 10.35.

His statistics on bullish bats showed there was a 60% probability that the stock would climb to 71.31, which is the height added to peak A. (The 60% number comes from the traditional way of gauging chart pattern performance using the measure rule. Price reaches the target 60% of the time when you add the height of the pattern to the top of it.)

“You might not believe this, but I really didn't care about the answer. I wanted to hold the stock for the long term, but having that background info is reassuring.”

Scott is also a fan of trendlines. For entry, he drew a trendline skirting the peaks going down to turn D. The day after D, the stock closed above the line, signaling a buy (with the belief that the bearish bat had found a bottom at D).

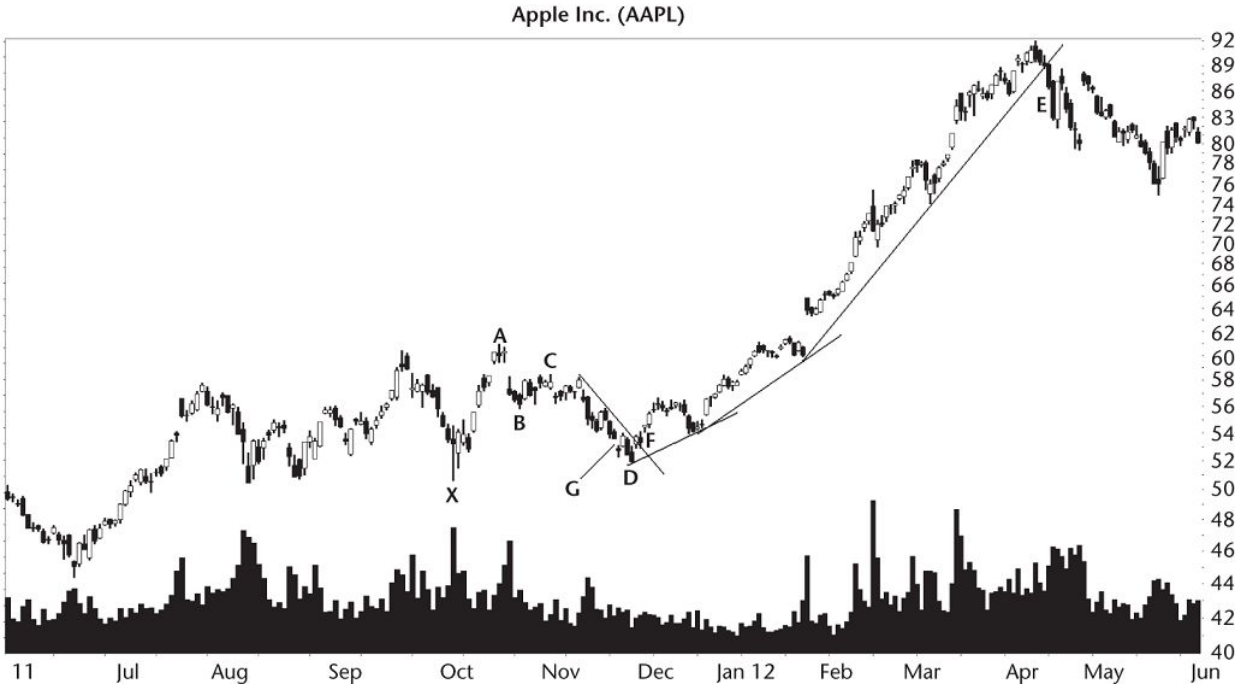


Figure 5.4 This is a sample trade using a bullish bat.

“Here's where I got creative. I used the bullish AB=CD chart pattern to find that turn D was overdue.” It predicted a bottom priced at 53.34, located in the area gap at G, so that gave Scott more confidence that the stock had put in a bottom at D. Regardless, he bought the stock at the open the next day and received a fill at 53.66.

“I placed a stop below the low at D, and below 52.00. Know why?” Before I could answer, he said, “Because at 51.83 it's seven cents below D and it avoids the round number 52. That's where others might place their trades.”

The stock cooperated and moved higher, forming a slightly upward curving trend. I show that on the chart (log scale) as a series of three lines rising toward E.

When the stock closed below the trendline near E, he placed an order to sell the stock at the open the next day. He received a fill at 87.14 for a gain of 33.48 a share, or 62% (not including commissions).

“I got lucky on this trade,” he told me.

“Why?”

“Two reasons. First, because the stock might not have turned upward at D. And second, I forgot to raise my stop.”

That's not always a bad thing, especially for long-term holds. If you're swing trading or short-term trading, then consider using a trailing stop, one that price stalks as it moves upward.

Another lucky factor was how the stock behaved with price rising in a near straight-line run up to E. Although the stock retraced after E to 74.60, it went on to a new high at just over 100 in September 2012. The stock need not have dropped far at E before moving higher, too. Still, for a relatively short-term trade, the exit was timely and the entry was delicious, too. Isn't there a red delicious brand of apple? Get it? He traded apple stock...

6
Big M

RESULTS SNAPSHOT

Appearance: Two peaks near the same price form a pattern that resembles an M.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	8 out of 36	10 out of 19
Breakeven failure rate	14%	8%
Average decline	17%	22%
Volume trend	Downward	Downward
Pullbacks	67%	63%
Percentage meeting price target	55%	58%
See also	Bullish bat, double tops	

The big M chart pattern is a variation of a double top, a twin peak pattern with a tall left side. In well-behaved patterns, the right side will also be tall so that the pattern resembles a tall M. The pattern confirms when price closes below the valley between the two peaks. We'll see a picture of the pattern in a moment.

Big Ms only break out downward, but they appear in both bull and bear markets. The average decline is about what you would expect from a bearish chart pattern, higher in bear markets than in bull markets. Volume trends downward from the first peak to the second, but plays no role in performance. Volume devotees may find that odd.

The performance rank for big Ms is good in bull markets but slips in bearish ones as the above statistics show. Let's look at some examples to see if we should include them in our trading toolbox.

Tour

Figure 6.1 shows a good example of a big M chart pattern. Price begins climbing to the first peak in the pattern from the launch price at A. Think of point A as the launch pad with the hope that price will return to the pad after the pattern completes.

In perfectly shaped big Ms, the price trend to the first peak is a straight line affair, often quite fast and steep, like you see here on the way to peak B.

The big M is a twin peak pattern, BC. It's similar in shape to a double top except for the tall sides, as I mentioned. Between the peaks is a recession, D, a valley where price bottoms. The stock recovers and forms a second peak, C.

After the second peak, price drops and breaks out when price closes below the valley between the two peaks. That happens at E in this example. The stock continues lower but then gets sucked back up to G. It's a pullback, which often returns the stock back to, or near to, the breakout price in 12 days on average.

A pullback is not part of the big M. Rather it's just something that occurs about two-thirds of the time. Traders need to be aware of it so that they don't close out a position prematurely.

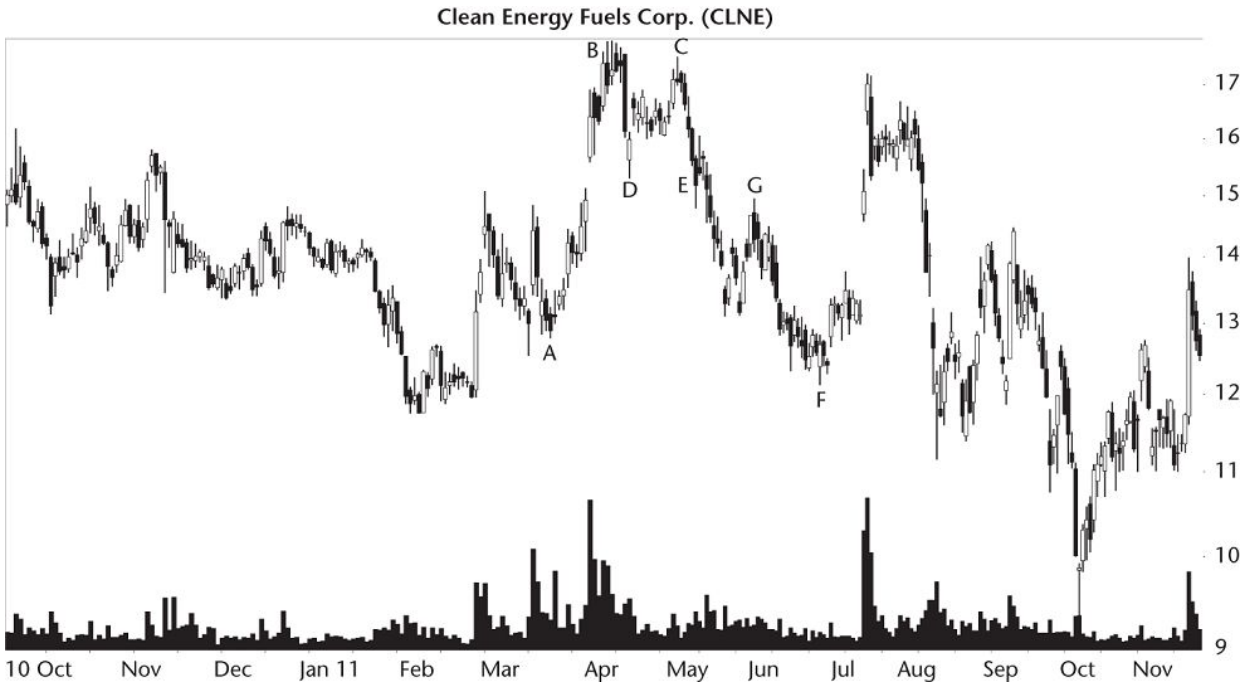


Figure 6.1 This big M sees price rise up to peak B and drop from peak C, bottoming at F just below the launch price, A.

In well-behaved big Ms, price drops after the second peak in a straight-line run down to the launch price, mirroring the rise to the first peak. That behavior represents the ideal situation, so don't depend on that happening in real life. In this example, the stock drops farther than the launch price, bottoming at F. Many times, however, price will bottom just above the launch price.

Identification Guidelines

Table 6.1 shows the identification guidelines for the big M.

Figure 6.2 provides another example of a big M at BD. Price begins the rise at A, the launch price (which is the second bottom of a nicely shaped Adam & Adam double bottom). Along the way, price gaps (an exhaustion gap because price consolidates after the gap) just past midway to the first peak and forms a pennant before resuming the climb to B.

Price meanders up and down as it searches for a bottom at C. The valley between BD looks like a mutant head-and-shoulders bottom (the left shoulder is LS, the right shoulder is RS, with head C between them. It's not an ideal head-and-shoulders because the two shoulders don't bottom at the same price).

At peak D, price gaps lower (breakaway gap) as if it can wait to reach grandma's house at E. The stock bottoms at E, which is just above the launch price (A). Notice that in this example, the rise from A to B is similar to the drop from D to E. That behavior rarely happens, so consider this a textbook example.

Appearance. Look for two peaks that top out near the same price. The two peaks likely won't share the exact same price, but they should be close. Use your best judgment and be flexible. If the right peak is higher than the left, performance improves but only by a percentage point. Oddly, performance is best if both peaks share the same price.

Table 6.1 Identification Guidelines

Characteristic	Discussion
Appearance	Two peaks near the same price form a pattern that resembles an M. The price trend approaching the first peak should move upward at a good clip, with few or no pauses along the way. Be flexible, though.
Price trend	Price rises into the first top, often a multiple of the big M's height. See text for guidance.
Volume	Trends downward from peak to peak.
Breakout direction, confirmation	Downward. A breakout occurs when price closes below the valley between the two peaks. It confirms the pattern as a valid big M.
Duration	No minimum is set, but the median time between the two peaks is about a month.

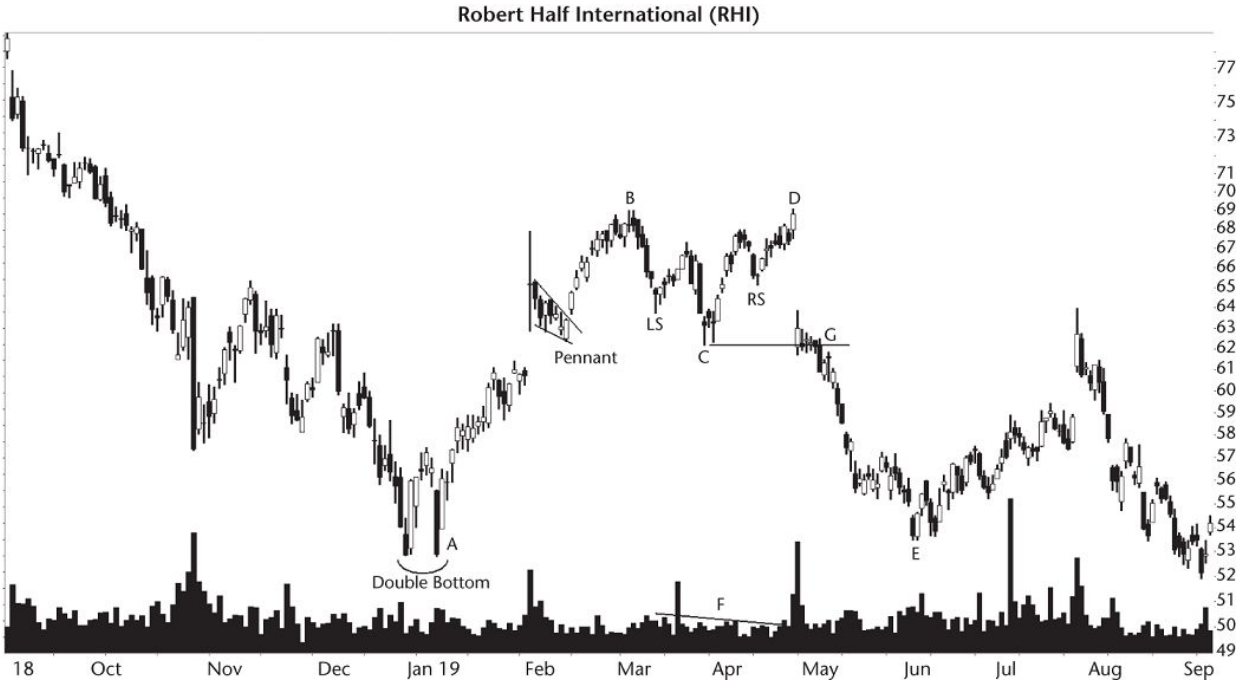


Figure 6.2 This big M (BD) struggles to find a bottom between the two peaks (where a head-and-shoulders bottom appears).

Between the two peaks, price forms a valley. I didn't set a limit on how far down the valley price slides, but the median height is about 12% in bull markets.

After the second peak, price drops, but often won't fall as steeply as it climbed on the rise to the first peak. In perfect patterns, the slope of the rise to the first peak will mirror the drop after the second peak, as I mentioned. In real life, it takes twice as long to drop from the second peak to the ultimate low as it did to climb from the launch price to the first peak.

Price trend. The price trend leading to the first peak should be unusually tall, often a straight-line run up at a steep slope. As a good gauge, I looked at the height from the higher of the two peaks (D) to the valley between the two peaks (C). The upward trend leading to the first peak (A to B) should be a multiple of the peak to valley height (at least one times the height, but two times is better, CD).

Volume. Volume trends downward from the first to the second peak most often. Don't discard a big M pattern because it has a rising volume trend. Volume doesn't affect performance. We'll see that later in Table 6.6.

Breakout direction, confirmation. The pattern breaks out downward. A breakout happens when price closes below the low price of the valley between the two peaks. I show the breakout where price closes below line G.

A downward breakout confirms the big M as a valid chart pattern. If price does not break out downward, then you don't have a big M.

Duration. The length of the pattern, from peak to peak, varies from about a week to nearly a year (I often limit pattern width to 6 months, but the longest I cataloged was 254 days. I'm sure I can find wider ones), especially if I use a weekly scale (I prefer daily).

Focus on Failures

Figure 6.3 shows what a big M failure looks like. Price begins a long climb at A toward peak B. The drop to C and recovery to the second peak, D, is typical for a big M. Contrast dip C with the sloppy head-and-shoulders valley in Figure 6.2.

So far, the chart pattern looks perfect, a textbook example of a big M. Let's look at the volume trend (G). It slopes upward. *Uh-oh*. But a rising volume trend in a big M doesn't have any impact on performance, so who cares?

At E, price breaks out downward when it closes below C, confirming the big M pattern as a valid chart pattern. However, the stock bottoms at E.

What happened?

A trader shorting the stock would become a body on the way to the morgue if they didn't close out their trade promptly. Price steamrolled higher by 131% on its way to being taken over by another company in January 2020.

Notice the breakout day volume. I drew a line from the breakout (E) to the volume bar directly beneath (H). Yes, volume is higher on the breakout day, but it is less than the 1-month average (according to my computer, and it's never lied...so far). The statistics say that breakout volume for big Ms doesn't help or hurt performance. So that's another yawn, and it's not really a performance clue, either.

Price rises after E and busts the downward breakout when it closes above the top of the pattern, at F (a breakaway gap). This is another example where bearish selling pressure wasn't high enough to overcome bullish buying demand. The bulls didn't buy like crazy and push price higher. That's clear from the anemic volume surrounding the breakout, but the stock moved up anyway.

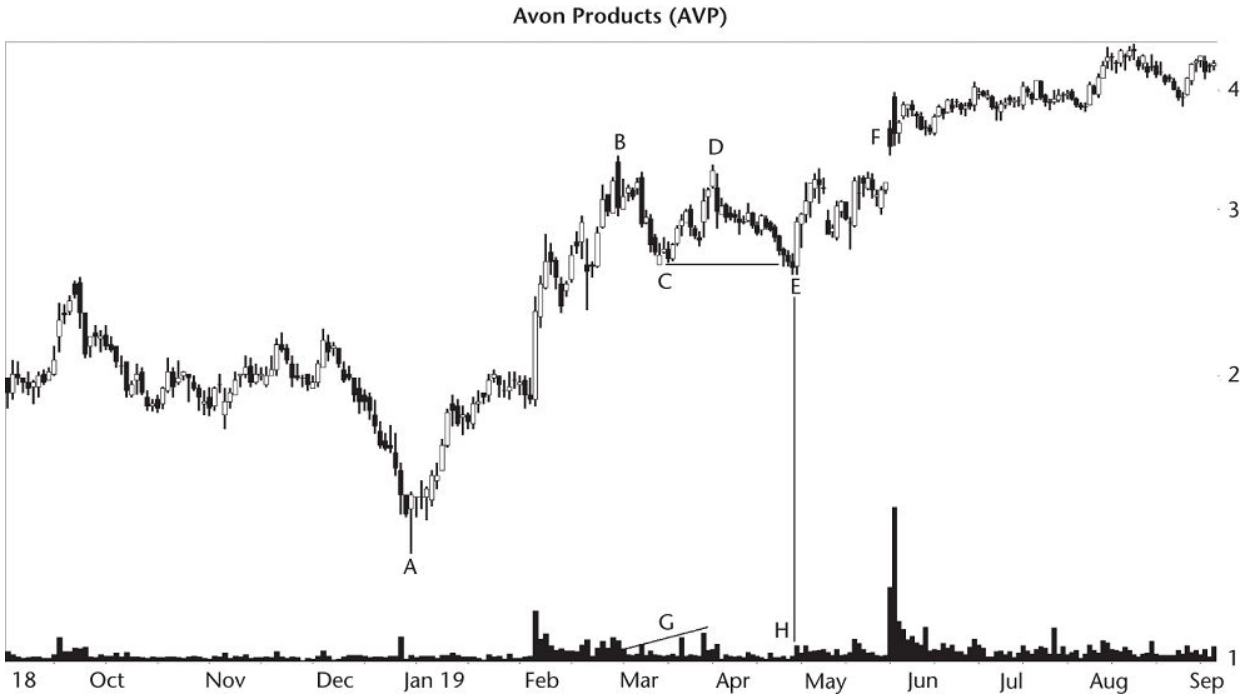


Figure 6.3 Price fails to drop more than 5% after the downward breakout.

The failure of this stock to stage a meaningful decline at E happens 14% of the time, and this is one example. A busted big M happens 38% of the time, so that's more alarming.

Let's talk more about numbers.

Statistics

Table 6.2 shows general statistics for the big M. Notice that the tables are not split into up and down breakouts. That's because valid big Ms don't have upward breakouts, at least not in this universe.

Number found. I uncovered most big M patterns manually by searching through more than 1,700 stocks (finding big Ms in 772 stocks) from mid-1991 to September 2019. I also automated finding them and checked each one to be sure they adhered to the ID guidelines. That process helped to unearth the stinkers like the one shown in Figure 6.3, where the pattern has a nice left-side rise but a mutant right-side decline.

Reversal (R), continuation (C) occurrence. All of the patterns acted as reversals of the uptrend by definition.

Average decline. Both bull and bear markets show performance that beats the average of all other chart patterns, but not by an amount that Mom would like to hear about, especially at three in the morning.

Standard & Poor's 500 change. Using the same hold time from the breakout to the ultimate low as the associated big M, we find that the big M dropped substantially more than the S&P 500 index. To put it another way, you can see how the general market helped the individual stocks perform.

Days to ultimate low. The *median* time to reach the ultimate low is a month for bull markets and about three weeks for bear markets. The table shows the *average*, which is longer in both bull and bear markets.

Speed trap? I checked price velocity and found that bear markets see price drop almost twice as fast as bull markets.

How many change trend? As a measure of how well the chart pattern works (trends), I counted how many big Ms saw price drop more than 20% after the breakout. The thinking here is that a 20% move represents a trend change. For example, if the markets are bullish, a drop of 20% turns the market bearish. I applied the same measure to chart patterns.

Table 6.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,090	569
Reversal (R), continuation (C) occurrence	100% R, 0% C	100% R, 0% C
Average decline	–17%	–22%
Standard & Poor's 500 change	–2%	–11%
Days to ultimate low	59	40
How many change trend?	32%	51%

Table 6.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	298 or 14%	46 or 8%
10	465 or 37%	81 or 22%
15	374 or 54%	84 or 37%
20	288 or 68%	70 or 49%
25	232 or 79%	85 or 64%
30	147 or 86%	58 or 75%
35	96 or 91%	41 or 82%
50	152 or 98%	79 or 96%
75	36 or 100%	24 or 100%
Over 75	2 or 100%	1 or 100%

As the table shows, higher numbers of big Ms see price drop more than 20% in bear markets as opposed to bull ones. This makes intuitive sense (it's like a receding tide will lower all boats). I consider values above 50% to be exhilarating.

Table 6.3 shows how failure rates climb for small drops after the breakout. For example, 298 big Ms or 14% of the patterns in bull markets failed to see price drop more than 5% after the breakout. Over a third (37%) failed to see price drop more than 10%. In bear

markets, the pattern performs better, with 37% failing to see price drop more than 15%.

You can use this table to help determine the chance of price making an extended decline. Want to make 50% after shorting your big M? Good luck with that. Only 2% in bull markets see price drop that far (that is, 98% fail to see price drop that far).

Table 6.4 provides breakout and post-breakout statistics.

Breakout direction. As I mentioned, if a big M breaks out upward, then you have a case of mistaken identity. Valid big Ms only break out downward.

Yearly position, performance. You will see the big M pattern appear anywhere in the yearly price range. Bull markets seem to find them hiding near the yearly high almost half the time. Bear markets see the breakout price hibernating in the middle of the yearly price range most often.

Mapping performance over the yearly price range doesn't see any statistically significant differences.

Pullbacks. A pullback occurs after a downward breakout. Price must return to the breakout price within a month by definition. The table says that price drops 7% to 10% in 6 days and then returns to the breakout price in a round-trip total of 12 days.

Table 6.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –17%, M–17%, H –16%	L –23%, M –22%, H –22%
Pullback occurrence	67%	63%
Average time to pullback bottoms	–7% in 6 days	–10% in 6 days
Average time to pullback ends	12 days	12 days
Average decline for patterns with pullbacks	–16%	–20%
Average decline for patterns without pullbacks	–19%	–27%
Percentage price resumes trend	60%	55%
Performance with breakout day gap	–17%	–23%
Performance without breakout day gap	–16%	–22%
Average gap size	$0.85	$0.48

Patterns without pullbacks perform better than do those with pullbacks. That behavior is not unique to big Ms; we've seen it in other species of chart patterns. After a pullback completes, it resumes dropping 55% to 60% of the time on average.

Gaps. Breakout day gaps don't help or hurt performance much. Notice that the gap size in bull markets is almost twice the size of bear market gaps. *Hmm*. That's a surprise.

I measured the median gap size (19 cents in bull markets and 21 cents in bear markets) and used those as the difference between tall and short gaps. I found that in bull markets, gaps taller than the median saw price drop an average of 19% after the breakout. Short gaps lost just 16%.

In bear markets, the results were 25% decline for tall gaps and 21% decline for short gaps.

Table 6.5 shows size statistics for the big M.

Height. We see that regardless of the market condition (bull or bear), tall patterns outperform short ones, but not by much. To compute this, measure the height of the pattern from the highest peak to the lowest valley between the two peaks and divide the result by the price of the lowest valley. If the result is larger than the percentage shown in the table, then you have a tall big M.

Width. Width doesn't offer any helpful performance improvement, although narrow patterns' performance is slightly better (but probably statistically insignificant). Measure the width of the pattern from peak to peak and compare it to the 26-day median. If the result exceeds the median, then you have a wide pattern.

Table 6.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–18%	–23%
Short pattern performance	–16%	–22%
Median height as a percentage of breakout price	12.4%	15.1%
Narrow pattern performance	–17%	–23%
Wide pattern performance	–16%	–22%
Median width	26 days	26 days
Short and narrow performance	–16%	–22%
Short and wide performance	–15%	–22%
Tall and wide performance	–18%	–22%
Tall and narrow performance	–18%	–24%

Height and width combinations. Upward breakouts show better performance if the big M is tall (regardless of width). Tall and narrow patterns outperform in bear markets.

Table 6.6 shows that volume doesn't play a key role in performance of big Ms.

Volume trend. Volume trends downward every two out of three trades on average.

Rising/Falling volume. There's no performance difference between big Ms with a rising or falling volume trend (as measured from peak to peak using linear regression).

Breakout day volume. Only bear markets show better performance after heavy breakout volume. Heavy breakout volume typically leads to better performance for other chart patterns (not so much with downward breakouts, though, so it's weird that big Ms are different).

Table 6.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	67% down	68% down
Rising volume trend performance	–17%	–22%
Falling volume trend performance	–17%	–22%
Heavy breakout volume performance	–17%	–23%
Light breakout volume performance	–17%	–20%

Table 6.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	2%	0%
Middle	16%	11%
Pattern bottom	70%	68%

Table 6.7 shows a table new to this edition: how often price hits a stop.

I split the pattern into three pieces: top, middle, and bottom. The top is the higher of the two peaks (B in Figure 6.3). The bottom of the pattern is the low at the valley between the two peaks (point C). The middle is, well, midway between the top and bottom.

In bull markets, price reached the top of the pattern just 2% of the time on the way to the ultimate low (after the breakout). Although bear markets show 0%, I actually found two samples where price reached the top.

If you wish to place a stop, then price will rise up to the middle of the pattern 16% of the time in bull markets, or recover (perhaps during a pullback) to the bottom of the pattern 70% of the time. Bear markets show similar performance.

In **Table 6.8** I mapped the breakout date into one of three decades, which the table shows, split into performance in the top portion of the table and failures in the bottom portion. Because bear markets only happened in the 2000s, they are not included in the statistics.

Performance over time. The 1990s showed the best performance from big Ms, but not so's you'd notice unless you traded a lot of them.

Failures over time. Failures happened at about the same rate over all decades studied, with the 2000s showing the most and the 1990s showing the least. These "failures" are breakeven failures, that is, failure of the stock to drop more than 5% after the breakout.

Table 6.8 Performance and Failures Over Time for Bull Markets

Description	**Bull Market**
1990s	–18%
2000s	–15%
2010s	–16%
Performance (above), Failures (below)	
1990s	13%
2000s	16%
2010s	14%

Table 6.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	693 or 38%	101 or 18%
Single bust count	466 or 67%	57 or 56%
Double bust count	15 or 2%	3 or 3%
Triple+ bust count	212 or 31%	41 or 41%
Performance for all busted patterns	38%	34%
Single busted performance	55%	55%
Non-busted performance (big W)	46%	30%

Table 6.9 shows how busted patterns performed. As you will recall, a busted big M happens when price breaks out downward, drops less than 10% (an arbitrary amount), reverses, and closes above the top of the big M (above the higher of the two peaks). The new, upward breakout busts the downward one. Multiple busts can follow.

Busted patterns count. Because the sample count for big Ms was high, I found quite a number of busted ones, from a sprinkling in bear markets (18%) to over a third in bull markets (38%). That makes intuitive sense because the bear market trend will help take price lower. It reminds me of watching a barge move down river. The water level drops near shore and gets all churned up. As a kid, I was afraid I'd be pulled under while swimming or even canoeing (even though the barge was across the river, about a quarter mile away).

Busted occurrence. Single busts happened most often followed by triple busts. While you may find that odd (that double busts don't come in second), you join me in my confusion. I've seen this trend in other pattern types and don't have an explanation for why it happens. A double bust would send price lower (that is, the first bust sends price upward and the second bust turns price downward), if that is any help.

Busted and non-busted performance. Grouping single, double, and three or more busts together sees price rise 38% after busted downward breakouts in bull markets. Separating out single busts, we see price rise an average of 55% in bull markets (that's measured from

the top of the big M to the ultimate high). That's a nice return if you can capture most of it.

I used big Ws as a proxy for a non-busted big M. They don't see price perform as well as their busted sisters.

If you can find a busted big M, buy it and pray that price continues rising for a long time (a single bust). The 55% rise compares to a 46% average gain for big Ws (which break out upward). See the table for bear market results.

Trading Tactics

Table 6.10 shows trading tactics for the big M pattern.

Measure rule, targets. I'll give an example of how to use the measure rule for big Ms in the sample trade. Use the measure rule to help gauge how far price will drop after the breakout. The rule is no guarantee that price will reach the target.

The bottom portion of Table 6.10 shows how often price drops to various pattern heights. For example, using the full height in the measure rule calculation in bull markets, price drops to the target 55% of the time. If you use half the height, the hit rate rises to 80%.

Want to live dangerously? Price reaches a target farther away (twice or three times the height) less often, as the table shows. Bear markets show similar hit rates, slightly outperforming their bull market counterparts.

If you wish to buy the stock (long), you can use the measure rule numbers to help determine the probability of a stock dropping to half, one, two, or three times the pattern's height below the breakout. Just remember that anything can happen. Look for underlying support where the stock might turn and decide if it's worth selling now before it drops that far.

Table 6.10 Trading Tactics

Trading Tactic	**Explanation**	
Measure rule	Measure the height of the pattern from the price of the low between the two peaks to the higher of the two peaks. Subtract the height from the low between the two peaks. The result is the target price. Ignore results at or below zero. Larger percentage moves will be unlikely. The bottom portion of the table shows how often the measure rule works.	
Stop location	Place a stop at the location of your choice, using the results in Table 6.7 as guidance.	
Pullback trade	Look for underlying support below the bottom of the pattern. Price may reach support and return to the breakout price in a pullback. Will that dip be deep enough to make money trading the pullback?	
Busted trade	If you find a busted big M, then consider buying the stock and riding the recovery.	
Tips	See text.	
Description	**Bull Market**	**Bear Market**
Percentage reaching half height target	80%	82%
Percentage reaching full height target	55%	58%
Percentage reaching 2× height	26%	27%
Percentage reaching 3× height	13%	15%
Return to launch price	52%	59%

Another way to trade a big M is to wait for price to find support after the breakout. Consider buying then and riding the recovery. Don't be fooled into buying the stock during a pullback. After a pullback completes, the stock resumes the plunge 55% to 60% of the time (see Table 6.4).

Return to launch price. I also computed the percentage of time that price, at the ultimate low, met or dropped below the launch price. The last line in the table shows that it reached the launch price just over half the time in bull markets.

One challenge of using this method is to figure out where the launch price is. Often it's the same as the trend start (see the Glossary). The launch price is the location where price begins rising into the big M in earnest. In the first three figures of this chapter, the launch price is point A. In Figure 6.4, it's point B.

After you determine a measure rule target, convert the potential decline into a percentage of the current price. For example, if the height is $10 and the stock is trading at 50, that's a potential 20% loss (10/50 × 100). Table 6.3 says that in bull markets, big Ms fail to see a stock drop more than 20% about two-thirds (68%) of the time. That suggests a large decline probably won't happen but your trade may be the exception. Visit with Table 6.3 and make the check.

Stop location. Use Table 6.7 to help determine where a stop loss-order should be located. If you're planning to short the stock, then *do* use a stop.

After you locate the stop, determine if the potential loss is big enough that you might need to reconsider the stop location. If you can't find a reasonable loss value (like 8% or less), then abandon the trade. Another big M will come along shortly. I saw the schedule.

Pullback trade. This setup idea should be used only by experienced traders. You can place an order to short the stock a penny below the bottom of the big M and cover at the bottom of the pullback. Table 6.4 can help determine your chance of making money using this technique.

In more than two out of every three trades (67% in bull markets, from Table 6.4) a big M will show a pullback within a month of the breakout, often in the first week.

Price drops for an average of 6 days and returns to the breakout price (or near it), in a roundtrip total of 12 days. The drop from the breakout to the low at the bottom of the pullback attempt measures 7% to 10% (for bull and bear markets, respectively). If you short the stock a penny below the breakout and place an order to cover the short 5% to 7% lower than the breakout, you might be able to catch the drop and make a profit.

The median decline is 6% (bull market) to 8% (bear market) in 5 days (for both markets).

Busted trade. Another way to trade a big M is to buy the stock long if the big M busts. After busting a downward breakout, price soars an average of 55% for a *single* busted pattern. Even if you only capture half of that, it's still a big gain. See Table 6.9 for details. The trick is to pick single busted trades, so look for overhead resistance within 10% of the breakout price, which might send the stock scurrying for cover.

Tips. I don't have any trades in big Ms to share with you because I don't like to short stocks. However, I do have some tips I want to pass on from what I've learned studying them in the bush.

Look at Figure 6.4 with a big M at CE. Notice the knot of support circled at I. If I was shorting this stock, this knot of support would be my first choice for where the stock will turn.

The knots need not be midway up from the launch price (but they do tend to be about midway). That is, it's about midway up the move from B to C.

What you want to look for is 3 days (or more) of horizontal price movement. Not a loose meandering of price, but a tight sideways move with lots of overlap. H is a good example of what to look for, but it's often shorter than what's shown. I is a good example. The two weeks to the left of B shows a third example of what to look for (not the placement in the BC run, but the type of horizontal move you're looking for). Sometimes it's only 3 or 4 days wide, but it's enough to support price.

The knot of support should be the first one *below* the confirmation price. In this example, D is the confirmation price of the big M. Notice that price drops to F and finds support at I. As a price target, pick the

highest price in the knot. Chapter 1 gives a good tutorial on knots, so reread that if you need a refresher.

Here's another scenario. Price moves up like you see from B to C. However, the closest knot of support is *below* the price of a prior peak (looking back a year or two). That prior peak will act as support, and the stock will likely turn there. In other words, as price drops, it first finds support at the prior peak, and if it were to continue down, it would then find support at a knot along the BC run. The *high* price of the peak would be my target.

In another scenario, you'll see price confirm the big M and then reverse. Price climbs a few percent (up to 4% or so) above the top of the big M and then reverses. Often a strong move down follows.

It's like traders push up the stock to hit stop-loss orders placed by the shorts, and once they are out of their positions, they drive price lower, cleaning the table.

What I'm describing is an example of a double busted big M. Those are nasty for shorts unless they time it right. How do we play this scenario? Price closes above the top of the big M, busting the downward breakout and then reverses to head back down. That's the time to short.

Finally, in a number of cases, I saw a large gap open as price climbed up to the big M (during the BC rise). The top of those gaps supported price on the way down, so they make for a good price target.

Table 6.11 shows information that I mentioned previously but decided to put in a table for your viewing pleasure.

Table 6.11 Special Features

Description	Bull Market	Bear Market
Higher left peak, performance	16%	22%
Higher right peak, performance	17%	22%
Even peak, performance	18%	19%
Median days from launch price to left peak	27	23
Median days from right peak to ultimate low	49	40

Higher peak performance. I looked at performance based on which peak of the big M was above the other (or even). In bull markets, a higher right peak suggests better performance. I would have guessed that a lower right peak would suggest a weak situation, but maybe a higher peak means there's farther to drop.

Time to drop. I measured the median time to rise from the launch price to the first peak compared to the drop from the right peak to the ultimate low. The time is about two to one. So you can measure the time from the move up to the first peak, double it, and that will give you an estimate of how long you'll need to remain in the trade to reach the ultimate low. My guess is it won't be that easy, but at least you'll have an estimate.

Sample Trade

Justin is an experienced trader, and he's shorted enough stocks to become proficient at it. “I got interested right there.” In **Figure 6.4**, he pointed to the strong drop the day after peak E and made plans to trade the big M (the twin peaks at C and E).

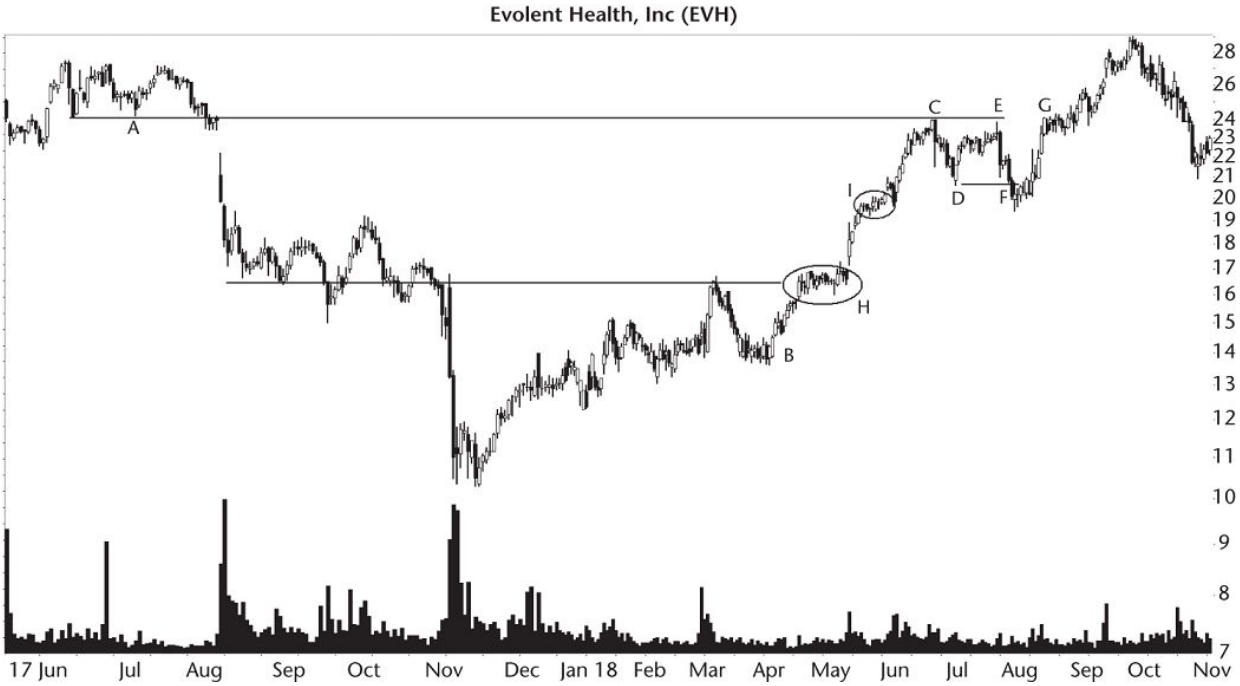


Figure 6.4 Justin shorted this big M and lost money on the trade.

Price started a concerted effort to climb when it broke out of a congestion region at B. Price paused at H and moved sideways for a time when it hit overhead resistance set up by the sideways move from August to November 2017 (shown by a horizontal line connecting circle H).

He checked a wider view of the chart to see where support and resistance were located. The daily chart showed a ceiling of overhead resistance blocking an advance higher (line A). Price at the top of the big M, peaks C and E, smacked against that resistance and ducked.

“I checked the weekly chart going back to 2015, but didn't see much support between D and H. But look at H. It's tight with lots of overlap as price moves sideways. Very nice.” A loose-looking congestion region has price meandering all over the place, but H looked different. “H is my target. I think the stock will drop that far.”

“What about the knot at I?” I asked and circled it on the chart. “It'll support price. It's an energy barrier. When Chakotay and Seven hit one, they crashed. You don't want that to happen.”

He made a funny face.

“It's from *Star Trek: Voyager*.”

“I like football, baseball, and soccer: any sport with a ball.”

I wondered how he felt about polo, but decided not to ask. I pointed to I again.

“It's too close to the breakout. The stock will blow right through that without pausing and head down to H. Trust me. I do this for a living. I know what I'm talking about.”

My face didn't move a muscle, but inside I grinned and thought that his money was about to become someone else's.

He used the measure rule to determine how likely it would be for price to reach H. The top of the pattern is at C, 24, and the bottom is at D, 20.60, for a height of 3.40. The top of the region at H is at 14.50, or 1.75 times the height of the big M below the bottom of it.

From Table 6.10, he calculated a 48% chance of reaching point H by interpolating the numbers of 55% (.55) of patterns reaching the target using the full height, and 26% (.26) of them using the 2× height. That is, .26 + (.55 – .26) × .75 = 48% chance of the stock dropping to H. The .75 number is 75% of the distance from 1 to 2, which is where H (1.75 times the height) sits.

How did he feel about a 48% chance of success? He looked at me and cocked an eyebrow. “Yuck,” he said.

For grins, he computed the height of the big M (3.40) and divided it by the breakout price (20.60) to get a value of 16.5%. According to Table 6.5, the pattern was tall, making him feel better. He considered B to be the launch price, and Table 6.10 said there was a 52% chance of reaching it (the last line in the table).

The two values were different: a 48% chance of reaching H and a 52% chance of reaching B, which was further away. *Hmm*. Maybe a subspace anomaly would be involved. I didn't say anything to Justin because a ball wasn't involved.

He had an order to short the stock if it dropped a penny below the low at D, or 20.59. He placed an order to cover the short at 17.03 (his target), above the top of the region at H, and above round number support at 17. Once the short triggered to open the trade, he placed a stop to exit the trade should price rise a penny above C, or 24.01.

Then he sat back and watched disaster unfold. The stock broke out downward at F, placing him in the trade, and it hit the energy barrier at the price of I. As I left his house, I started whistling the *Voyager* theme song.

The stop covered his position at G for a loss of 3.42 a share, not including commissions.

What did Justin do wrong? I think he should have anticipated a pullback at the energy barrier (the knot at the price of I). After that, though, I would have expected the stock to resume the downward move to H. Table 6.4 says that 60% of the time, price *does* resume the downward move. Fortunately he had a stop in place to protect his backside while he waited for the *Voyager* crew to rescue him.

7
Big W

RESULTS SNAPSHOT

Appearance: Price forms twin bottoms at or near the same price with an unusually tall left side, often looking like a big W.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Short-term bullish reversal
Performance rank	11 out of 39	8 out of 20
Breakeven failure rate	9%	9%
Average rise	46%	30%
Volume trend	Downward	Downward
Throwbacks	64%	66%
Percentage meeting price target	74%	55%
See also	Bearish bat, double bottoms (all varieties)	

A big W is nothing more than a double bottom with a tall left side. It might have a tall right side, too, but that depends on how well the stock performs after an upward breakout. If price doesn't break out upward, then it's not a big W. I'll discuss identification guidelines later.

The above Results Snapshot shows important performance numbers for the big W. For example, the breakeven failure rate, at 9%, is quite good (meaning relatively small compared to other chart pattern types). The average rise for perfect trades is 46% (bull market), which is also good, hence the rank of 11 where 1 is best. Bear markets see price climb by 30%, which ranks 8 out of 20, where 1 is best.

If you use the full height of the pattern in the measure rule computation, price will reach the target 55% to 74% of the time (bear, bull markets, respectively).

Let's look at examples of big Ws.

Tour

Figure 7.1 shows what a big W looks like. The pattern has the first bottom at B, the second one at D, with a hill in between, C. The pattern confirms as valid when price closes above the top of the hill.

The left side of the pattern begins at A, which is what I call the launch price. The stock drops in a straight-line run down to the first bottom of the big W.

After the big W forms the second bottom, price recovers. In this example, the stock rises to E in a quick sprint higher from the low at D. That's still well short of the launch price, A. After point E, the stock is like a speedboat pulling a water skier. You get a lot a thrust to get the skier on top of the water (to E) and then the boat planes out (on the way to F). It's possible that the stock will recover and post a new ultimate high, so F is tentative until more data arrives.

Volume (G) has a U-shape (in this example) until the spike at D. Linear regression says volume trends upward from bottom to bottom, so that's why I drew the line sloping higher at G. Volume for the big W trends downward most often, though.

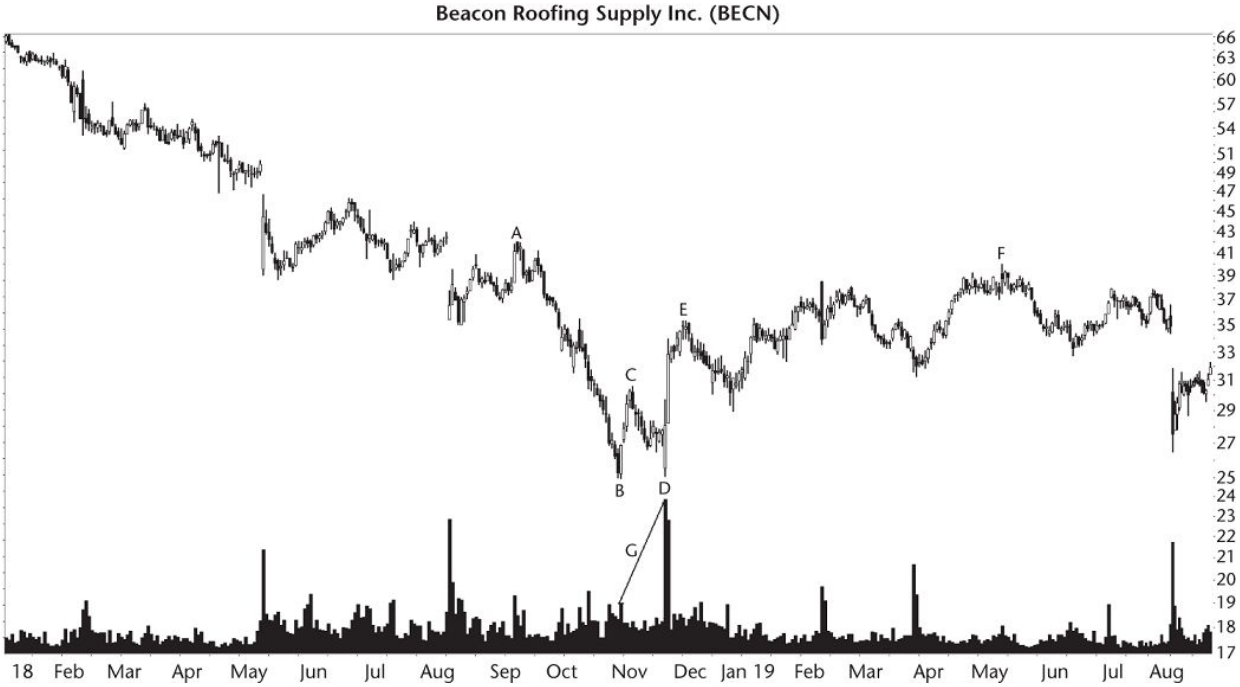


Figure 7.1 This big W sees price rise, but not very far.

Identification Guidelines

Table 7.1 shows identification guidelines for the big W and refer to Figure 7.2 for guidance.

Appearance. The big W is a form of double bottom, one with a tall left side, and if the pattern works as it's supposed to, a tall right side as well. The two valleys should bottom near the same price (use your best judgment as to how close the bottoms need to be to each other). Often the bottom-to-bottom variation is small (the median is 14 cents).

Table 7.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price forms twin bottoms at or near the same price with an unusually tall left side. A well-formed pattern should remind you of a big W (that is, if price on the right side rises to match the left).
Price trend	Downward, leading to the first bottom. Look for a long, steep drop often at least the height of the pattern (from the lower of the two valleys to the peak between the valleys) above the top of the pattern. See text.
Volume	Downward the majority of the time, but don't exclude a big W with a rising volume trend.
Breakout direction, confirmation	To break out, price has to close above the peak between the two bottoms, confirming the pattern as valid. Without an upward breakout, you don't have a big W.
Duration	No minimum duration and the longest pattern I studied is about 9 months wide.

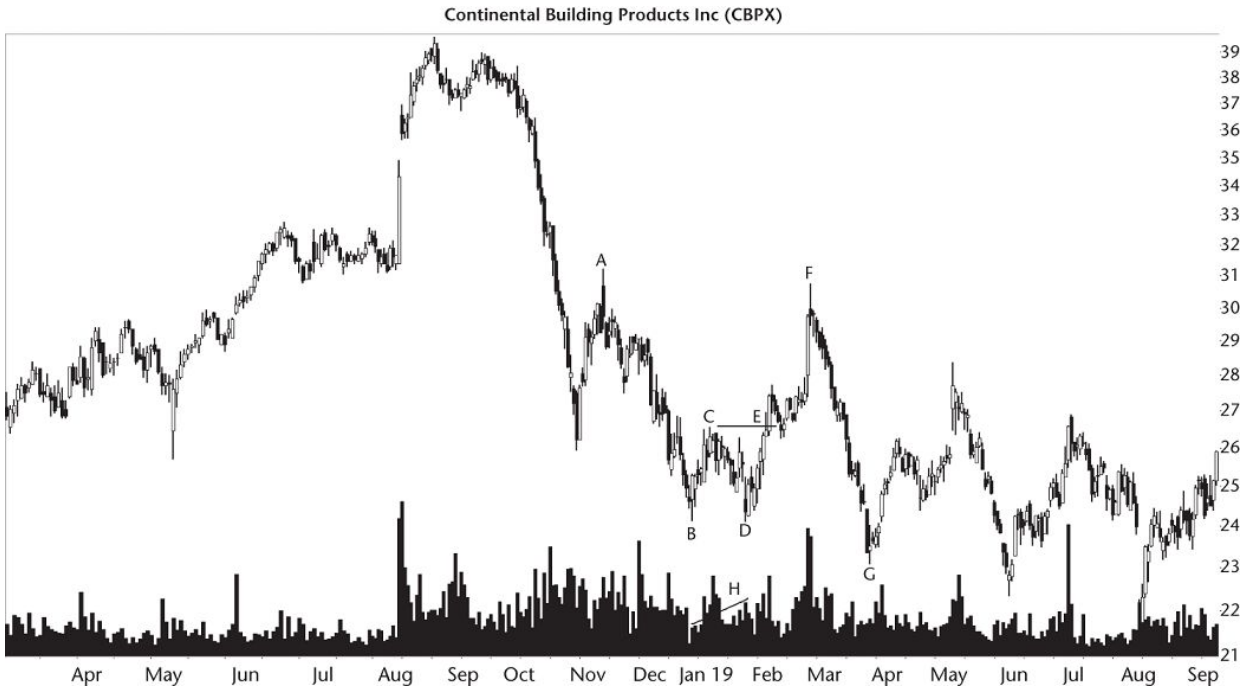


Figure 7.2 Price at F almost returns to the launch price, A.

Price trend. The downtrend from A to B is a steep drop like that shown in the figure. You want to avoid patterns that see price meander or even move sideways as the drop approaches B. If price takes its time reaching the first bottom, then the chart pattern is probably a double bottom (see one of the Adam & Eve varieties).

Eyeball the height from the center peak between the two bottoms to the lower of the two bottoms. Then make sure the left side of the pattern is at least that height above the central peak.

For example, the height of the big W is the high price at point C minus the low at B. The left side must be at least this height above C. In this case, the downtrend begins at A, which is well above C, so the downtrend from A to B is tall enough. A tall left side is what separates big Ws from double bottoms. A big W is a type of double bottom, but few double bottoms are big Ws. I hope that makes cents (sense).

Volume. Don't disqualify a big W because of its volume trend. However, most of the time, you'll see volume trending lower from valley B to D. Linear regression on the big W shown in the figure says volume slopes upward. It doesn't *look* like it does, but the numbers say otherwise. I show the upward trend at H.

Breakout direction, confirmation. Price always breaks out upward from a big W. If it doesn't, then you don't have a big W. A breakout occurs when price closes above the hill between the two bottoms. In Figure 7.2, that would be a close above C, which I show as a horizontal line at E.

Price confirms the big W as a valid chart pattern when it closes above C. Again, if you don't have confirmation, then you don't have a big W.

Duration. I did not set a minimum or maximum width between the two valleys. They ranged from a very narrow 4 days to 260 days. I looked at the 4-day pattern, and it looks fine.

Focus on Failures

Figure 7.3 shows what the failure of a big W to perform looks like. The big W is at ACB, with A and B being the bottoms and C being the hill between the bottoms. Price drops from H in a long and steep move to the first bottom. The stock confirms the pattern as valid at D, where it closes above the horizontal line drawn from the high at C.

Price spikes higher at E, but closes the trading day near the bottom of the price bar, at F. That close is below the lower of the two bottoms (A). The breakout from this big W was upward (at D), but price reversed and closed below the bottom of the big W, busting the upward breakout.

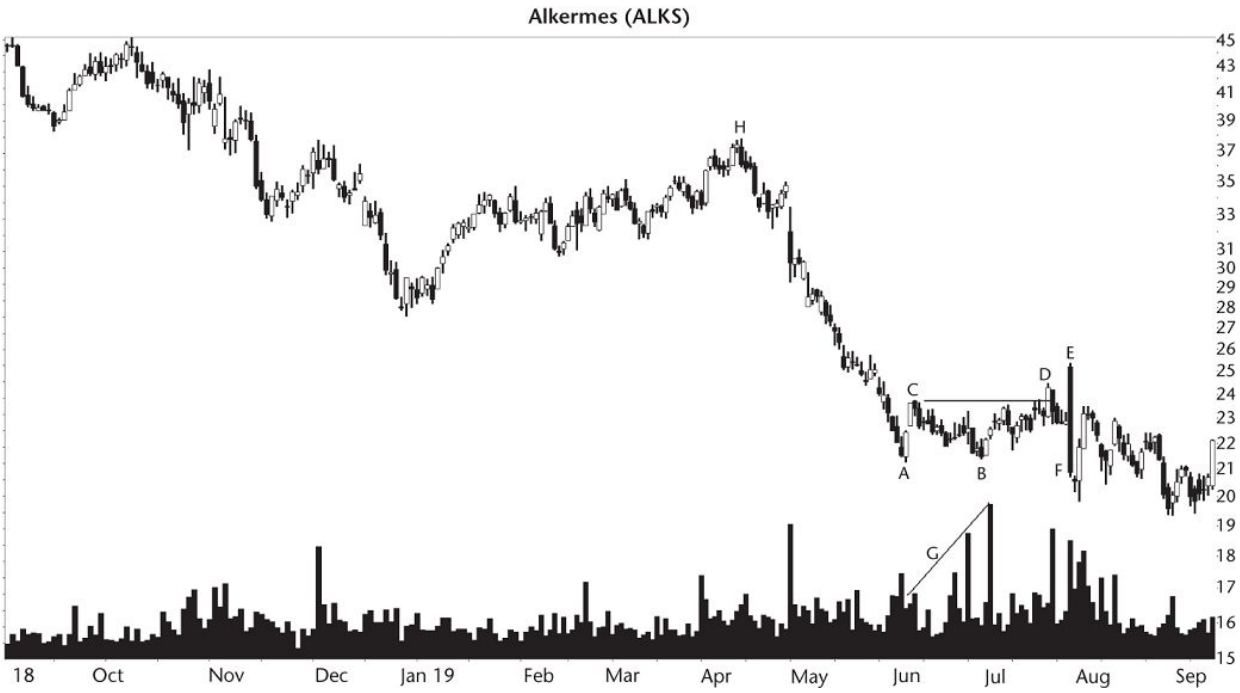


Figure 7.3 Price busts the upward breakout from this big W.

Volume (G) in this example slopes upward from A to B. Table 7.6 says that volume slopes downward 69% of the time on average, and yet all three figures shown so far have upward volume.

Why did this big W fail to rise back to the launch price (H), the point where the long downtrend leading to point A began?

We can only speculate as to the answer. I checked the Internet for news at price bar EF and found that the company released second-

quarter earnings before the market opened. Apparently the stockholders couldn't make up their minds about the news. Sometime during the day, price climbed up to E (perhaps on news that the company settled a patent dispute). Once price dropped below bottom B, it may have triggered stops, helping price decline to F. In this case, it appears the earnings announcement prevented the big W from fulfilling its promise of rising to H.

Statistics

Table 7.2 shows general statistics for the big W pattern.

Number found. Most of the patterns I found manually over the years but automated finding them to highlight big Ws I might have missed (like the one shown in Figure 7.3). I checked each one to be sure it was a proper pattern. I uncovered almost 2,700 patterns in 765 stocks using data from July 1991 to September 2019. Not all stocks covered the entire period, and some no longer trade.

Table 7.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,172	514
Reversal (R), continuation (C) occurrence	100% R, 0% C	100% R, 0% C
Average rise	46%	30%
Standard & Poor's 500 change	13%	1%
Days to ultimate high	213	83
How many change trend?	62%	47%

Reversal (R), continuation (C) occurrence. The big W is a reversal pattern. Price enters the pattern from the top (going down) and exits out the top (going up), reversing the inbound downtrend by definition.

Average rise. The average rise is decent in bull markets, with gains averaging 46%. That's if you trade it perfectly, over 2,000 times. Your trades may do better or worse than what's shown in the table. As you would expect, bear markets with upward breakouts see price climb less far than in bull markets.

Standard & Poor's 500 change. I measured performance of the S&P 500 index from the date of the big Ws breakout to the ultimate high. The table shows the result, which is inferior to the big W's performance. I'm not sure if the comparison is fair. It might be like comparing the times of two marathon runners, one who is top ranked

and the other who is an amateur. The top-ranked runner will have a better time than one who walks the 26 miles.

Days to ultimate high. To gain 46%, it takes time, about 7 months in bull markets. Bear markets see gains taking less time (about 3 months), but that's because the average rise is less, 30%. However, a check of the numbers says the velocity in bear markets is higher than in bull markets, even when a rising price trend is heading against the current in bear markets. The bear market velocity is almost twice as fast as in bull markets. It might be because of the lack of a posted speed limit.

How many change trend? I counted how many big Ws saw price rise more than 20% after the breakout, and I must say, the bull market posts a terrific number (ranking sixth and eighth for bull and bear markets, respectively).

Big Ms in bear markets show good performance, too, but not as good as in bull markets. That's expected, of course (a rising tide lifts all boats in bull markets, but bear markets depress performance after upward breakouts).

Table 7.3 shows cumulative failure rates for big Ws. The breakeven failure rate is 9%. That means 9% of the big Ws fail to see price rise more than 5% after the breakout.

Look at how the failure rates climb. In bull markets, 20% fail to see price rise more than 10%.

Table 7.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	201 or 9%	48 or 9%
10	229 or 20%	85 or 26%
15	206 or 29%	82 or 42%
20	185 or 38%	57 or 53%
25	177 or 46%	45 or 62%
30	141 or 52%	36 or 69%
35	144 or 59%	32 or 75%
50	296 or 73%	45 or 84%
75	248 or 84%	44 or 92%
Over 75	346 or 100%	40 or 100%

Table 7.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L48%, M46%, H42%	L31%, M29%, H28%
Throwbacks occurrence	64%	66%
Average time to throwback peaks	8% in 6 days	11% in 6 days
Average time to throwback ends	12 days	12 days
Average rise for patterns with throwbacks	45%	27%
Average rise for patterns without throwbacks	48%	34%
Percentage price resumes trend	76%	60%
Performance with breakout day gap	47%	39%
Performance without breakout day gap	46%	28%
Average gap size	$0.38	$0.47

Want to make 50% on your trades? You'll lose 73% of the time in bull markets (that's one winner and three losers, and that's if you trade it perfectly). In bear markets, the results are even worse with 84% failing to climb more than 50%.

Set realistic goals and realize that you'll have to make more on winning trades to compensate for losing ones. Trading perfectly also helps... (that's a joke, but focusing on improving technique often leads to making more profit).

Table 7.4 shows breakout and post-breakout statistics.

Breakout direction. All big Ws break out upward. If they don't, then they are not big Ws.

Yearly position, performance. I sorted patterns according to the breakout price and checked performance of the three ranges.

The best performance for both bull and bear markets comes from big Ws near the yearly low. The worst performance comes from those near the yearly high. It suggests that bottom fishing (buy low, sell high) works better for big Ws than momentum trading (buy high, sell higher).

Throwbacks. A throwback happens after the breakout when price rises but quickly returns to the breakout price (within 30 days). Often price resumes the rise thereafter. In Figure 7.1, for example, the throwback peaks at E before returning to the breakout price. Figure 7.2 shows a throwback after point E.

Throwbacks occur about twice every three trades. Price peaks in 6 days after rising between 8% and 11%, on average, before completing the trip back to the breakout price (or nearly so) in 12 days (that's the roundtrip total).

Notice that price does better if a throwback is absent. We've seen this behavior in other chart patterns, too. How can you tell if a throwback will happen? Look for nearby overhead resistance, such as prior peaks, round numbers (10, 20, 30, and so on), or sideways price movement between the breakout price and about 10% higher. If you see some, then expect a throwback. In my trading, I always expect a throwback will happen, and I party when they don't.

The vast majority of the time, between 60% (bear market) and 76% (bull market), price will resume the upward move after a throwback completes. Few things are more aggravating than placing a buy stop a penny above the breakout price, getting into the trade perfectly, only to see a throwback take price lower. Sometimes, the stock continues down below the bottom of the pattern and you're stopped out. Then you sit on the sidelines as the stock recovers and soars like an eagle. Fortunately, this type of behavior is rare for big Ws (Table 7.9 says it happens 20% or less).

You can always wait for a throwback to complete before making a trade. However, if you wait, you'll miss investment opportunities where a throwback doesn't occur (that is, you'll miss the best performers).

Gaps. Breakout day gaps push price higher, meaning performance is better if a gap appears. However, in bull markets, the extra push probably won't be enough to wake you from a sound sleep. In bear markets, it's more of a jolt.

How can you tell if price will gap higher? I've no idea. However, I measured performance from the opening price the day *after* the gap to the ultimate high. So if you see a gap, you can buy into the situation and maybe score extra performance points for doing so.

Table 7.5 shows how the sizes of big Ws perform.

Height. Tall big Ws perform better than do short ones. To use this finding, measure the height of the big W from the peak between the two bottoms to the lower of the two bottoms. Divide the result by the breakout price (the price of the peak between the two bottoms). If the result is bigger than that shown in the table, then you have a tall pattern.

Table 7.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	48%	31%
Short pattern performance	44%	29%
Median height as a percentage of breakout price	11.9%	16.2%
Narrow pattern performance	45%	30%
Wide pattern performance	47%	30%
Median width	23 days	21 days
Short and narrow performance	44%	30%
Short and wide performance	44%	26%
Tall and wide performance	49%	32%
Tall and narrow performance	48%	29%

Table 7.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	69% down	74% down
Rising volume trend performance	45%	25%
Falling volume trend performance	47%	31%
Heavy breakout volume performance	46%	33%
Light breakout volume performance	46%	24%

Width. Bear markets don't see a performance difference, but in bull markets, wide patterns perform slightly better than narrow ones. The median width between narrow and wide is about 3 weeks (see the table). The width is the time between the two bottoms.

Height and width combinations. Patterns that are tall and wide outperform the other combinations of height and width. You might want to avoid short patterns (either narrow or wide). They underperform in bull markets and don't do that well in bear markets.

Table 7.6 shows volume statistics for the big W pattern.

Volume trend. Volume trends downward most of the time, as measured using linear regression between (and including) the two bottoms of the big W. As I mentioned, don't discard a big W because it has an unusual volume trend. Remember, the trend is your friend.

Rising/Falling volume. Patterns with falling volume, as measured from bottom to bottom in the big W, perform best in both bull and bear markets. The bear market shows the biggest difference between the two values (31% versus 25%). The 25% number comes from 136 samples, so additional samples will likely narrow the gap.

Breakout day volume. Bull markets don't see a performance difference, but bear markets do with heavy breakout volume helping performance. The difference seems unusually wide, though, so additional samples will likely narrow the spread.

Table 7.7 is one of my favorite tables because this kind of trading information can pay for the price of this book.

How often are stops hit? I placed a stop-loss order at the peak between the two bottoms and price touched this (after the breakout and on the way to the ultimate high) over 70% of the time. Scoot the stop a bit lower (the middle of the big W, measured from the peak to lowest valley) and the stop triggers less often, between 13% and 20% of the time. Place it at the lower of the two bottoms and it'll hardly trigger at all.

The safe place to locate a stop-loss order is below the bottom of the big W, but the distance between the stop and the buy price may entail a large potential loss. The rumors are true: Positioning a stop is an art you need to master to become a successful trader.

Once you decide where to place the stop, convert the potential loss into a percentage of the current price. If you gasp at the result, then the stop is too far below the current price. Either adjust the stop location, abandon the trade altogether, or hope the trade succeeds.

Table 7.8 shows how big W performance has changed over three decades. Because bear markets only occurred in the 2000s, they were excluded from consideration.

Table 7.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	73%	75%
Middle	20%	13%
Pattern bottom	2%	1%

Table 7.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	42%
2000s	51%
2010s	45%
Performance (above), Failures (below)	
1990s	8%
2000s	8%
2010s	11%

Performance over time. The 2000s were the outstanding decade for performance with gains averaging 51%. The worst performance came in the 1990s with the 2010s nestled comfortably between those two.

Failures over time. I would expect to see low failure rates in the 2000s because that was the best performing decade, and yet the table shows it's tied at 8% with the 1990s. The 2010s showed a slight uptick in failures. The failures I'm reporting on, by the way, are 5% failures. They count how many big Ws fail to see price rise more than 5% after the breakout.

Table 7.9 shows statistics related to busted patterns.

Busted patterns count. Big Ws rarely bust, as the table shows (compared to other patterns, which see busts in the 40% range). What does this mean? Up to 20% of the time, on average, price will fail to rise more than 10% after the breakout before reversing and closing below the bottom of the big W. So if you want to make a lot of money, then one in five trades won't exceed 10% profit, on average, and that's if you trade it perfectly.

Busted occurrence. For those patterns that busted, I sorted them into one of three bins: single, double, and three or more busts (triple+). The table shows single busts happening most often followed by double and triple busts. In some other pattern types, we see triple busts coming in second place, so big Ws behave themselves.

Busted and non-busted performance. Compare the performance for all busted patterns (drops of 15% in bull markets) with the performance of big Ms (not Ws). Big Ms see price drop an average of 17% after a downward breakout, and they act as the proxy for a non-busted big W.

Busted pattern performance for big Ws is not as good as trading a big M chart pattern. However, if you are lucky enough to trade a single busted big W, then price drops an average of 23% (in bull markets). That's exceptional for a bearish pattern; of course, your mileage may vary.

How can you tell if the big W will single bust (as opposed to double or triple bust)? I'll leave that as an exercise for the reader (translation: I have no idea, but focus on nearby overhead resistance that might turn price down or the timing of an earnings announcement).

Table 7.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	389 or 18%	105 or 20%
Single bust count	220 or 57%	78 or 74%
Double bust count	123 or 32%	19 or 18%
Triple+ bust count	46 or 12%	8 or 8%
Performance for all busted patterns	–15%	–18%
Single busted performance	–23%	–22%
Non-busted performance (big Ms)	–17%	–22%

Trading Tactics

Table 7.10 shows trading tactics.

Measure rule, targets. Use the measure rule to help determine how far price may rise after the breakout. The lower portion of the table shows the numbers. Before I get there, let me explain how to use the measure rule.

Measure the height of the big W by subtracting the lower price of the two bottoms from the price of the highest peak between the two bottoms. Add the height to the peak between the two bottoms to get a full-height target. The table says that price will reach that target 74% of the time in bull markets.

If you use different multiples of the height (half, 2×, or 3×), you will see different hit rates. For example, if you like to hold onto a stock and target three times the height, compute the height as already described, multiply it by three, and add it to the breakout price. Price will reach the target 39% in bull markets but only 17% in bear markets.

Stop location. Use Table 7.7 to help determine where to place a stop. You can use a volatility stop, which is based on how volatile a stock is, to locate your stop. Often I'll stick a stop below a nearby minor low and double-check that with a volatility stop. See the Glossary for details on volatility stops.

Return to launch price. Look back at Figure 7.1. Point A is the launch price. It's the price where the stock begins the decline in earnest, leading down to the big W. Unfortunately, the launch price can be hard to determine in some cases, so I use the measure rule to give better targeting guidance.

Table 7.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the pattern from the lower of the two bottoms to the high between the two bottoms. Add the height to the high price between the two bottoms. The result is the target price. Large percentage moves will be unlikely. The bottom portion of the table shows how often the measure rule works.
Stop location	Place a stop at the location of your choice, using the results in Table 7.7 as guidance.
Launch price	Determine where the launch price is and use that as a target.
Higher second bottom volume	If the right bottom shows higher volume than the left one, expect better performance (in bull markets).

Description	Bull Market	Bear Market
Percentage reaching half height target	88%	77%
Percentage reaching full height target	74%	55%
Percentage reaching 2× height	53%	31%
Percentage reaching 3× height	39%	17%
Return to launch price	70%	51%

Table 7.11 Special Features

Description	Bull Market	Bear Market
Lower left bottom, performance	46%	29%
Lower right bottom, performance	47%	30%
Even bottom, performance	38%	34%*
Higher left volume, performance	45%	31%
Higher right volume, performance	49%	27%
Median days from launch price to left bottom	22	21
Median days from right bottom to ultimate high	92	51
Large rise between valleys, performance	48%	30%
Small rise between valleys, performance	44%	29%
Median rise between valleys	14%	26%

* From 18 samples.

However, the stock can return to the launch price after a big W breaks out. Keep that in mind when setting targets. Look for price to stall just short of the launch price. Figure 7.2 shows an example of that. The launch price is point A and price climbs to F, which is just below the price of A.

The last line in the table shows the stock returns to the launch price 70% of the time, on average, in bull markets. To use this finding, convert into a percentage the distance from the current price to the launch price. If it's a high percentage, then it'll probably be unrealistic.

You can run the potential gain by Table 7.3. For example, if the current price is 40 and the launch price is 50, that means a gain of 25% or ((50 – 40)/40 × 100). Table 7.3 says that almost half (46%) will fail to see price rise more than 25%.

Table 7.11 shows features that might improve trading a big W.

Lower valley performance. I checked the performance of big Ws where the price of the left bottom was above, below, or equal to the right bottom. There wasn't much of a performance difference except for big Ws where the price of both bottoms was the same. When that happened, performance suffered, and quite substantially.

Higher bottom volume. I found that if the right bottom of the big W has volume higher than the left bottom, patterns outperform in bull markets and underperform in bear markets. Because the bull and bear market values show opposite performance results, it concerns me that this finding won't be reliable. Use it with caution.

Time to launch. I measured the time from the launch price to the first bottom and compared it to the time from the second bottom to the ultimate high. The numbers show that the drop into the big W is short, about three weeks, but the recovery is long. In bull markets, the median is about four times as long.

Rise between valleys. I compared the height of the peak between the two bottoms of the big W to performance. If the rise was taller than the median (measured as the height from peak between the two bottoms to the lower of the two bottoms divided by the price of the lower of the two bottoms), then performance improved. In bull markets, the differences are pronounced compared to bear markets.

Experience

I have traded the big W a number of times, but all from the buy side so the lessons learned aren't as important as those on the sale side. To put it another way, it doesn't matter at what price you buy. It only matters at what price you sell.

Let me tell you about what I found in my trade review.

Abercrombie & Fitch Co.

Abercrombie & Fitch Co. (ANF) in 2017 had been trending lower for almost a year after peaking in March 2016. I saw a big W forming and thought this would make for a good bottom-fishing trade.

Here's what I wrote in my trading notebook. “Buy reason: Extra cash. I'm hoping that this will be the start of a rebound, a fallen angel–type play. Earnings were good and the stock shot up and then threw back, as expected. It should recover from here, based on a good earnings surprise. If not, then sell when it gets in the 10+ range to keep the [dollar] loss small. The odds don't favor this trade, but I'm betting the stock has bottomed and will recover from here.”

The earnings announcement saw price climb from 11.69 to a high of 13.75 the next day, or almost 18%, but it retraced most of that gain by the time I bought on 10 March. I received a fill at 11.68. The position size was small, about one-fourth of what I normally trade, and that told me I was concerned about the stock.

I sold the stock (at 10.92) after the report of weak same-store-sales numbers less than 2 weeks after I bought, taking a 7% loss.

This was one of those trades where the smart money is just waiting to trap you. I sold the day price bottomed. The stock recovered but only to 12.46 before dropping again. The stock bobbed up and down, eventually making another big W in August and September 2017, which was the real bottom. From there, the stock climbed from its confirmation price of 10.49 to peak at 29.20, or 178% higher.

My instincts were good. I picked a stock that almost tripled except the timing was wrong. I missed entering a winning trade by 6 months.

I made a perfect entry, buying after a throwback completed, and sold on the day price dropped (but didn't close) below the bottom of the big W. If I had waited for price to close below the bottom of the big W, I would have stayed in the trade longer but would have taken a slightly bigger loss.

The big question comes from a curious mention in my notebook: “The odds don't favor this trade.”

- Lesson: If the odds don't favor the trade, then don't make it.
- Lesson: Keep the position size small if you believe a trade is risky.

Teradyne Inc.

I made a trade in Teradyne Inc. (TER) as the stock emerged from the 2007–2009 bear market. A big W confirmed and I bought in at 5.94 on 1 May 2009. The stock threw back but then cooperated and climbed.

Later in the year it moved sideways until August 2010, when it resumed its upward move. Here's what I wrote in my notebook: “Sell reason: Hit stop. This sold on reaction to market weakness, so my guess is I sold too soon. I expect a rebound, but you can't be too sure.”

I sold within a week of the stock peaking and before it dove by more than 40%. I made 194% on the trade (I almost tripled my money!).

This is one of those trades you want to climb up on the roof of your house with a megaphone and shout at your neighbors that you're rich. Of course, you'd be gunned down by the rednecks surrounding your house like a moat, so don't do that.

There is no lesson to share with this trade. A perfect entry and perfect exit led to a nice reward for holding onto the stock for 1.8 years.

Ann Taylor

In Ann Taylor (ANN), the stock made a big dive, forming the left side of the big W in late 2006. I bought on 1 February 2007, at a price of 35.19. This was a late entry by about 2 weeks, and yet if I had bought at a penny above the confirmation price, I would have entered the

trade at a lower price: 33.82. My preferred entry method is to place a buy stop a penny above the breakout price.

On the sale, here's what I wrote: “21 March 2007. I decided to sell this using a trailing stop set between today's close and the low +.01 as the cents margin (11 cents) [I think this has to do with setting an automated trailing stop with my broker]. Hopefully, this will move up in the morning and I can get out at a higher price than just selling at the open. The market was up big today, and this stock was one of the few to close lower. It's running up against SAR [support and resistance] at 39–40, as predicted. My guess is it'll form a handle and backtrack. I don't want to wait around, though. I think the company sucks because SSS [same-store-sales] are soft despite positive comments from the company.”

I received a fill at 39.09. Four trading days later, the stock peaked at 39.92, before entering the bear market and seeing the stock bottom at 2.41, or 94% below where I sold. I made 11% on the trade.

- Lesson: Buying as soon as the stock breaks out of a chart pattern is often better than waiting.

Energy East Corp.

With Energy East Corp. (EAS), I saw a big W forming and price didn't confirm the pattern before heading back down to the price of the first bottom, where I bought. I received a fill at 23.12.

The stock cooperated, for a time, by rising but eased lower and looked to be heading down about 3 weeks after I bought. I sold it for a 2% loss so I could deduct it on my taxes.

From my notebook: “Sell reason: End-of-year tax-loss selling. This is going down, I predict, so it's time to dump it and lower my cap gains taxes. This H&S [head-and-shoulders] bottom didn't work as expected.”

The head-and-shoulders became apparent after I bought (which happened at the right shoulder low), and it never confirmed by the time I sold on 30 December 2005, at 22.69.

This trade contradicts the prior lesson. If I had placed a buy stop a penny above the top of the big W, I would have entered the trade at

24.06, well above my 23.12 purchase price. The big W didn't confirm until 10 January 2006, where the stock continued up to make a vertical run for 8 days (peaking at 25.57). Then it moved sideways to down for 1.5 years.

I sold on the day the stock started to climb in that vertical rise. Bad exiting timing, that's for sure. But I would have collected dividends from the electric utility only if I had continued to hold the stock, so selling was a good choice.

Sara Lee Corp.

Sara Lee Corp. (SLE) in September 2008 was another buy into a big W that didn't confirm. I lost 4% on that trade when the stock hit my stop and continued lower in the 2007–2009 bear market.

- Lesson: If premature breakouts are a concern, wait for confirmation before entering a trade.

Swift Transportation Co.

In Swift Transportation Co. (SWFT), I played the big W differently. I bought when price returned to the launch price, expecting a strong move higher as oil prices were trending downward: “Sell reason: The stock has made a large down move today, following the market lower and others in the industry [are] down. I believe this will move lower, forming a handle to the big W.”

A handle *did* form, and I sold in the early part of that development at 19.25, for a loss of 8%. I watched from the sidelines as price climbed to 33.66. I missed out on a potential gain of 75%. *Sigh*.

Again, I picked the right stock, but it took me out when it formed a handle before making a strong push higher.

I don't have a lesson to share except the idea of riding price higher after it reaches the launch price might have merit. Test it to be sure it can work for you and your markets.

Sample Trade

Figure 7.4 shows this chapter's sample trade with the big W located at AC. Before I discuss the trade, let's apply the measure rule to this pattern.

The measure rule uses the height of the big W. The peak (B) between the two bottoms has a high price of 12.66. The lower of the two bottoms is C, at 11.27, for a height of 12.66 – 11.27 or 1.39. Add the height to the price at the peak (C) and you get a target of 12.66 + 1.39 or 14.05. Price will reach the target 74% of the time in bull markets, according to Table 7.10. If you want a closer target, take half the height and use that. Thus, a closer target becomes 12.66 + 1.39/2, or 13.36. Price reaches the half-height target 88% of the time.

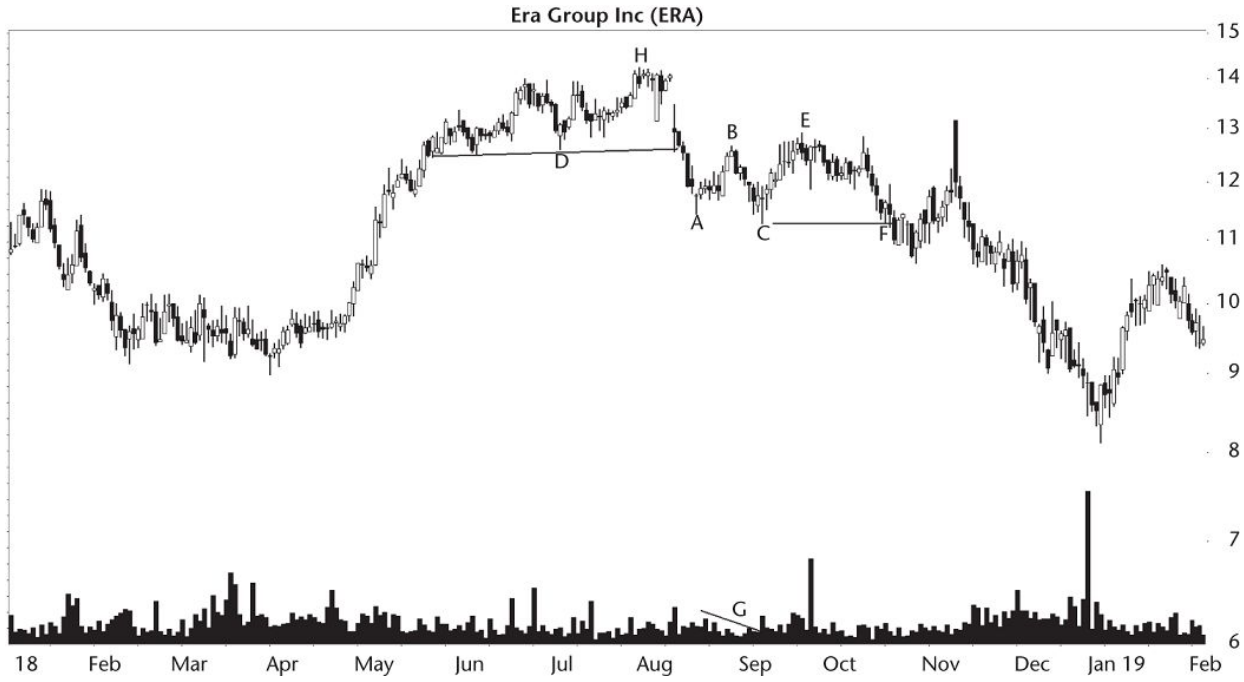


Figure 7.4 John decided not to trade this big W because of overhead resistance.

Want to know if the big W is tall? Take the height (1.39) and divide it by the breakout price (12.66) to get 1.39/12.66 × 100 or 11.0%. Table 7.5 says that a tall pattern needs to have a value above the median 11.9%, so this pattern is short. That suggests underperformance.

The launch price is at H, where the downtrend begins. H could be a post-breakout target, but as you can see, the stock didn't climb that

far.

Volume trends downward (G), so that's good for performance (from Table 7.6). It may be difficult to tell from the chart, but the left bottom has volume of 492 shares and the right bottom has volume of 791. In other words, the right has higher volume and that's good for performance (from Tables 7.10 and 7.11).

The pattern is short (bad), volume trends downward (good), and the right bottom has higher volume than the left (good). This seems to suggest a better performing big W. Of the three measures, the height is the most important and it was bad. That's not a good omen.

How did John trade the stock? “I didn't.”

“Why not?”

“I used your simulator to scan charts and didn't like what I saw. I looked for a horizontal move followed by a big W.”

He was referring to my Patternz software (available for free on my website at www.ThePatternSite.com), which has a trading simulator built into it. It will advance to a chart pattern and then play back price at the speed of your choice.

“I saw setup after setup which didn't work so I decided not to trade the stock. Sometimes the best trade you can make is none at all.”

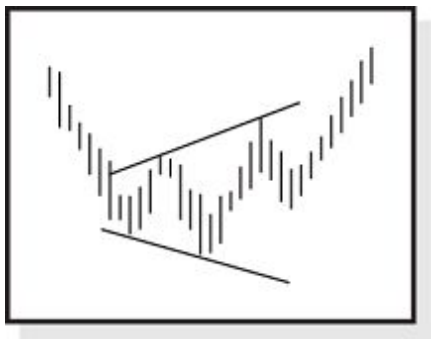
However, another setup is similar to this situation. Imagine the same setup with price forming a top, moving sideways (D), and dropping to a chart pattern (a big W or other type of chart pattern). Price does its thing, and the stock eventually climbs to close above H (the high point in the horizontal D move). That's the time to buy. I describe this setup at http://thepatternsite.com/CPSetup.html (*Note:* case is important).

In Figure 7.4, price broke out upward from the big W (a close above B) the day before E. That confirmed the big W as a valid chart pattern. Then price stalled as if the bulls were afraid of attacking overhead resistance set up by the sideways move at D.

The stock collapsed, and when price closed below the bottom of the big W, at F, it busted the upward breakout. The stock recovered to poke its head above 13, but moved lower to bottom at 8.11 in December. Had John bought at the breakout price and sold at the

ultimate low, he would have lost 36%, not including commissions and fees. He made the right decision to walk away from this trade.

8
Broadening Bottoms



RESULTS SNAPSHOT

Appearance: Price trends downward, leading to the chart pattern. The pattern looks like a megaphone with higher highs and lower lows that widen over time.

Upward Breakouts

Reversal or continuation	Long-term bullish reversal
Performance rank	15 out of 39
Breakeven failure rate	16%
Average rise	45%
Volume trend	Upward
Throwbacks	69%
Percentage meeting price target	65%
Synonyms	Broadening triangle, five point reversal
See also	Broadening tops

Downward Breakouts

Reversal or continuation	Short-term bearish continuation
Performance rank	23 out of 36
Breakeven failure rate	26%
Average drop	15%
Volume trend	Upward
Pullbacks	62%
Percentage meeting price target	41%

Broadening bottoms are middle-of-the-road performers because the breakeven failure rate and average rise or decline are mediocre. I've traded this pattern only a handful of times over the years but made a profit 75% of the time. Even though performance needs improvement, maybe you can make money trading the pattern. Let's see what broadening bottoms have to offer.

Tour

Figure 8.1 shows an example of a broadening bottom. This particular one is called a five-point reversal because there are five alternating touches, two minor lows (2 and 4) and three minor highs (1, 2, and 3). A five-point reversal is also rare: In one study, I located only 5 in the 77 broadening bottoms I examined.

Price trends downward in late August and reaches a low 2 days before the chart pattern begins. That brief dip is what I call undershoot, where the stock is so excited as it drops, it dips below the beginning of the chart pattern within 2 weeks of its start. I ignore brief dips and overshoot—a brief rise within 2 weeks of the pattern's start—when determining the trend start (see the Glossary for details) leading to a chart pattern. Price overshooting or undershooting the formation start is common in many chart pattern types.

How does a broadening bottom differ from a broadening top? A broadening bottom has price trending downward into the start of the pattern; a broadening top has price trending up. The difference is arbitrary. I made the distinction thinking that the two might behave differently.

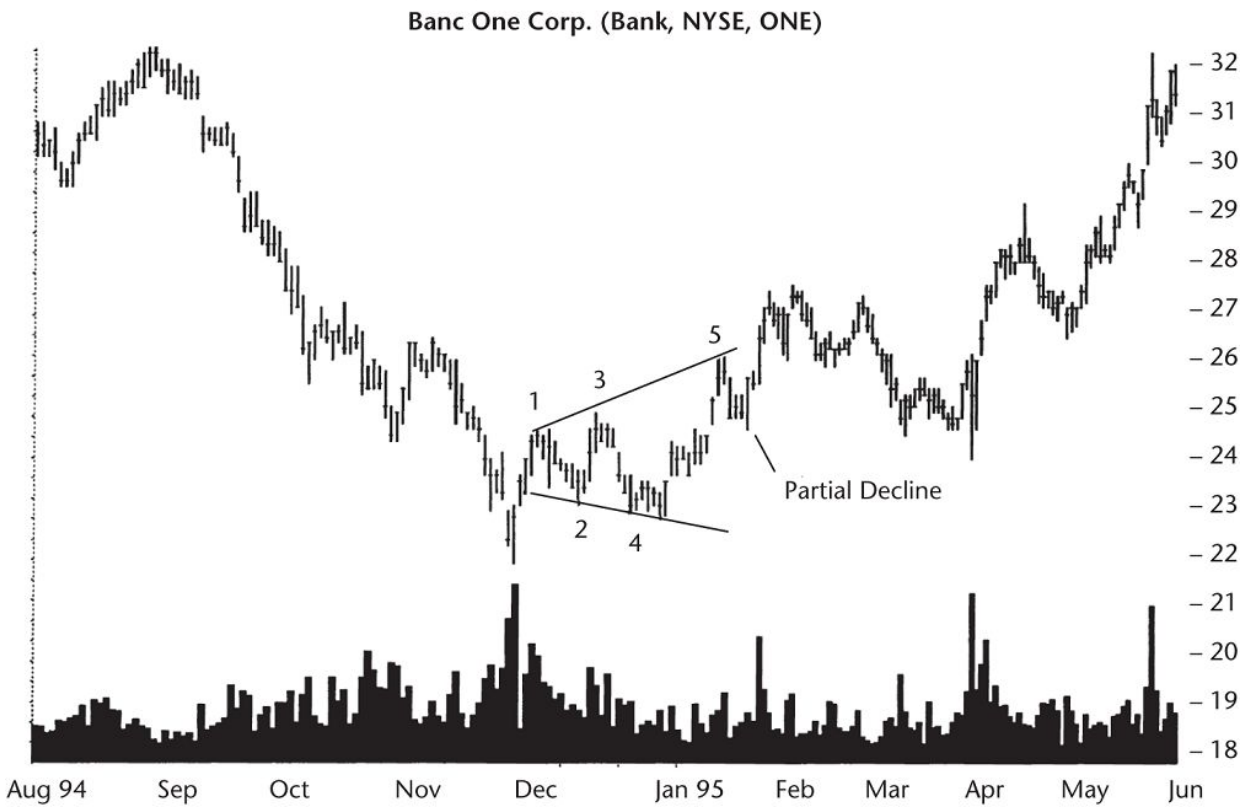


Figure 8.1 A broadening bottom, specifically a five-point reversal, so-called because of the five touchpoints: two minor lows (the even numbers) and three minor highs (the odd numbers).

If you ignore undershoot in this case, the broadening bottom appears at the bottom of the downtrend, hence the pattern is a broadening bottom and not a top.

This particular chart pattern shows a partial decline which correctly predicts an upward and immediate breakout. Price moves down from 26 to 24.50, reverses course, and shoots out the top. The stock reached a high of 38.50 just over a year later.

Identification Guidelines

Table 8.1 lists identification guidelines for broadening bottoms.

Appearance. The shape of the broadening bottom reminds me of chaos theory where small disturbances oscillate back and forth, then grow unbounded, wreaking havoc.

In the stock market, price begins to bounce between two imaginary barriers that diverge, forming a megaphone shape. When you draw a trendline touching the minor highs along the top and another connecting the minor lows along the bottom, the broadening pattern becomes apparent. Neither the top nor bottom trendlines should be horizontal or near horizontal. Rather, price along the peaks becomes higher and price along the bottoms trends lower. Use the figures in this chapter for guidance.

Table 8.1 Identification Guidelines

Characteristic	Discussion
Appearance	Megaphone shape with higher highs and lower lows.
Price trend	The short-term price trend should be downward, leading to the broadening bottom. Ignore any overshoot or undershoot within 2 weeks of the start of the broadening bottom.
Trendlines	Price follows two diverging trendlines: The top one slopes upward and the bottom one slopes downward.
Touches	Should have at least five touches: three on one trendline and two on the other, but not necessarily alternating touches. Each touch should be a minor high or a minor low.
Whitespace	Price should cross the pattern from top to bottom plenty of times, filling the pattern with price movement, not leaving a large hole of whitespace.
Volume	The volume trend from the start to end of the pattern is usually upward. Don't discard a pattern because volume trends downward.
Breakout direction	A breakout occurs when price *closes* above the formation's high (upward breakout) or below the pattern's low (downward breakout). See text for details. The breakout can occur in either direction, and price may move horizontally for months before breaking out.

Price trend. Price trends downward into the start of a broadening bottom. Even if price rises a week or two before the chart pattern begins (overshoot), ignore it. The pattern is still a bottom. This arbitrary designation makes intuitive sense: A bottom should appear at the end of a downtrend, not when price is climbing to the moon and not if price spiked upward just before the pattern started.

Trendlines. Two trendlines drawn across the minor highs and lows outline the pattern. The top trendline should slope up; the bottom one

should slope down. The diverging trendlines distinguish the broadening bottom from other types of chart patterns, such as the right-angled broadening formation (which has one horizontal trendline) and the broadening wedge (both trendlines slope in the same direction).

Touches. To prevent confusion, I changed the guidelines to require at least five touches, three of one trendline and two of the other. Fewer touches increase the likelihood of misidentification (but it still might be a broadening bottom). Play it safe and look for at least five trendline touches.

Each trendline touch should be at or near a minor high (top trendline) or minor low (bottom trendline). What is a minor high or low? A minor high happens when price trends up, then drops back down, leaving a clearly defined peak. A minor low is just the same except flipped upside down: Price moves lower, and then heads back up, leaving a clearly defined valley.

In Figure 8.1, odd numbers tag the minor highs and the even numbers are the minor lows. Let me stress that the minor highs and lows need not be alternating, as shown in the figure. Just as long as you can count at least five touches, then that's fine. If price cuts through a trendline, then don't count that as a touch.

Notice that at the start of this pattern (on the bottom), price cuts through the lower trendline, but it doesn't count as a touch.

Whitespace. **Figure 8.2** shows a problem with identification. This is from 3M (MMM) in August 2019. On the left side ("Bad"), the stock appears to make a broadening bottom. It has two touches of the top trendline and three on the bottom, as required. The problem is that white hole in the pattern, which I highlight at A. Price does not cross the pattern enough to fill the space.

Compare the left side with the right side ("Better"). It's the same picture except I show a down-sloping channel. It's not perfect because of the spike at B, but it'll do. This is a better interpretation of a viable chart pattern compared to the left side. Do *not* cut off a turn like I've shown on the left side and call it a broadening bottom.

Volume. There is nothing magical or important about volume. I used linear regression from the start of the chart pattern to its end and

found that volume trends upward most of the time in this chart pattern.

Breakout direction. The breakout price can be difficult to identify in a broadening chart pattern as the pattern develops. I look for the place where price pierces the up or down trendline or makes an extended move, hugging the trendline.

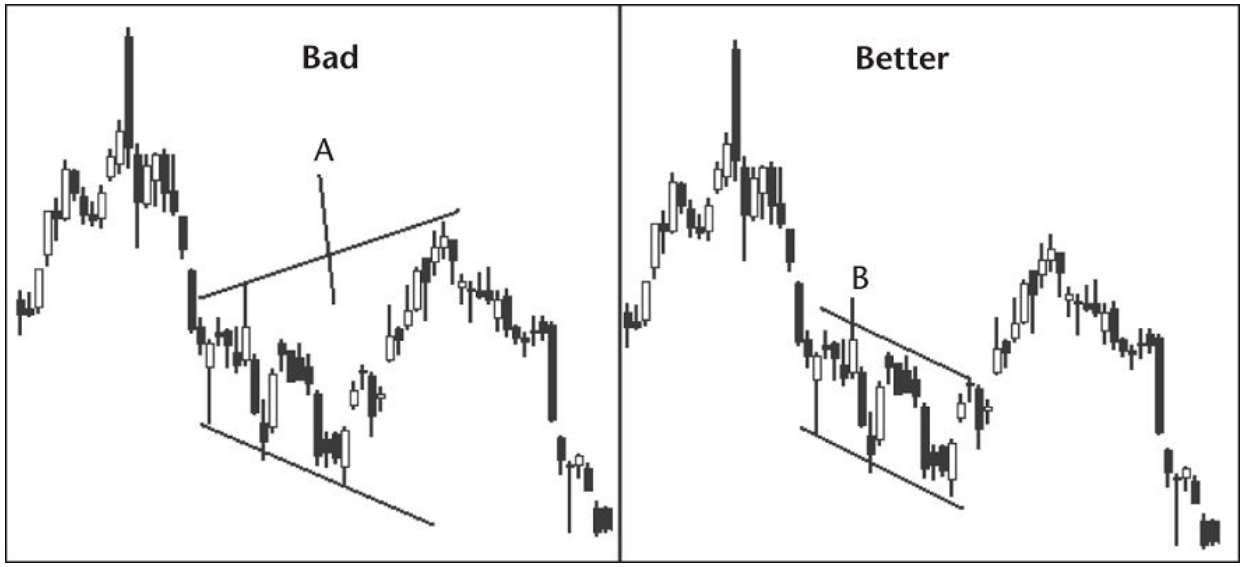


Figure 8.2 Don't accept patterns with too much whitespace. This happens when you cut off a turn and call it a broadening bottom.

If price *closes* outside a trendline boundary, then the penetration point becomes the breakout price. If price moves up (for example) and follows along the top trendline without piercing it, then I backtrack to the prior minor high and draw a horizontal line forward in time until price closes above the horizontal line. When that happens, that is the breakout point (providing the pattern obeys the other identification guidelines first). Use the same logic for a downward breakout.

Let me give you an example. Consider the broadening bottom shown in **Figure 8.3**. Where's the breakout from the broadening bottom?

Figure 8.3 Where's the breakout?

If you wait for price to close above the top trendline, then you'd have to wait until C. Imagine if the top trendline were steeper. You might never see a breakout.

If the pattern meets all of the identification guidelines (especially trendline touches) and price begins sliding upward (along the top trendline or downward along the bottom one), like you see from B to D, then go back to the prior minor high (upward breakout) or prior minor low (downward breakout) and use that price as the breakout price. In this case, point B is the prior minor high in the chart pattern and the breakout is point D. If you worry about buying into the broadening bottom too late, then skip the trade. Chart patterns are not like attending a party 15 minutes late. Promptness pays.

Focus on Failures

Figure 8.4 shows a typical broadening bottom failure. Price trended down from the March high. On 19 March (E), the company announced the pricing of a secondary public offering of nearly 8 million shares of common stock. The stock price took a hit and shares tumbled that day and the next, just before the start of the broadening bottom.

The broadening bottom formed innocently enough with price swinging from low to high (A). Price touched the top trendline three times and the bottom trendline three times, as one would expect in a well-behaved broadening bottom (meaning at least 5 touches).

Figure 8.4 This broadening bottom breaks out downward, reverses, and busts the downward breakout.

At B, the stock broke out downward from the broadening pattern when price closed below the lower trendline. Because price trended downward going into the pattern, a trader might expect a downward breakout, too (so the pattern acted as a continuation of the downward price trend). Indeed, they might expect price to drop back to just above the December 2018 low (F).

However, the stock surprised traders when it stalled at C. It was even more of a shock when the stock began to stair-step higher and closed above the top of the pattern at D. At D, the stock busted the downward breakout. After that, the stock was an airline taking off and flying into the clouds.

The behavior of the broadening pattern shown in the figure represents what I call a 5% failure. Price breaks out lower but fails to continue moving in the breakout direction by more than 5% before heading back up. The reverse is also true for upward 5% failures: Price climbs after an upward breakout by no more than 5% before tumbling.

Statistics

Table 8.2 shows general statistics for the broadening bottom chart pattern.

Number found. I dug up 1,238 patterns in 667 stocks starting from August 1991 to September 2019 but removed the bear market ones because they were too few when sorted by breakout direction. Not all stocks covered the entire range, and some no longer trade. Both up and down breakouts are for bull markets.

Reversal (R), continuation (C) occurrence. By definition, a bottoming pattern has price entering the pattern from the top. A pattern acting as a reversal sends price out of the pattern upward (reversing the downtrend). A continuation pattern breaks out downward (continuing the downtrend).

Average rise or decline. Price posts a 45% rise after an upward breakout, helped along by a bullish general market. Downward breakouts suffer when price tries to drop in a bullish market. That's like swimming against the current.

Table 8.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	599	405
Reversal (R), continuation (C) occurrence	100% R	100% C
Average rise or decline	45%	–15%
Standard & Poor's 500 change	14%	–2%
Days to ultimate high or low	240	47
How many change trend?	52%	29%

Standard & Poor's 500 change. The performance of the index can't compare to the performance posted by the chart pattern. That's typical, but I'm not sure it's a fair comparison. We're comparing a perfect trade to the index, using the same dates as the broadening bottom trade. It does show that broadening bottoms can beat the indices, and it also shows that the general market helps performance.

Days to ultimate high or low. This is a measure of how long price takes to reach the ultimate high or low (after the breakout). For upward breakouts, it'll take about 8 months of worry to reach the ultimate high. Downward breakouts take about 6 weeks to drop 15%.

If you compare the ratio of 45% in 240 days to 15% in 80 days, we discover that price drops nearly twice as fast as it rises. That might be a hint for options traders. You might be able to reach your price target faster during a downtrend than an uptrend.

How many change trend? Over half of broadening bottoms with upward breakouts see price rise more than 20% after the breakout (which is good). Downward breakouts suffer, with only 29% dropping more than 20%. The best patterns see price forming strong and lasting trends.

Table 8.3 shows failure rates. How do you measure failure? It took a while before I was able to answer that. I measured the move from the breakout price to the ultimate high or low and sorted the results into bins. Then I counted how many entries I had in each bin. It's like sorting coins you found under the seat cushions into piles of dimes, nickels, and quarters, and then counting how many dimes you found, and how many nickels, and so on.

If the breakeven cost of trading is 5%, then we see that 16% of the patterns with upward breakouts will fail to see price rise more than 5%. Downward breakouts are worse, with 26% of them failing to drop more than 5%.

Notice how the failure rates climb. Almost half (46%) of downward breakouts see price drop no more than 10%. *Ouch*.

Table 8.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	98 or 16%	106 or 26%
10	71 or 28%	80 or 46%
15	60 or 38%	67 or 62%
20	56 or 48%	36 or 71%
25	33 or 53%	34 or 80%
30	34 or 59%	25 or 86%
35	26 or 63%	26 or 93%
50	55 or 72%	27 or 99%
75	68 or 84%	4 or 100%
Over 75	98 or 100%	0 or 100%

What does this mean? Trading chart patterns and expecting a huge gain is unrealistic. Large gains happen, sure, but you might want to invest for the long term (buy and hold) or stick to swing trading and nibble off what you can. Keep your expectations realistic.

Table 8.4 shows breakout-related statistics.

Breakout direction. This just in: Broadening bottoms break out upward more often than downward!

Yearly position, performance. I sorted the breakout price into one of three bins, depending on where it was in the yearly high–low price range. The best performance came when the breakout price was near the yearly low. The worst was when it was near the yearly high. That suggests bottom fishing (buy low, sell high) works better for the broadening bottoms than momentum trading (buy high, sell higher).

Throwbacks and pullbacks. The next several rows in the table dissect throwbacks and pullbacks. If you don't know what a throwback or pullback is, ask your mom (or check the Glossary).

Throwbacks happen 69% of the time. Price breaks out upward from a broadening bottom, rises for a week by an average of 6%, and then returns to (or comes close to) the breakout price by day 12.

If you're an experienced swing trader, you might want to short a downward breakout and close the position in a week or when price drops 7%. However, the median decline is just 5%, so it might not be worth it.

Table 8.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	60% up	40% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 48%, M 45%, H 43%	L –16%, M –13%, H –11%
Throwbacks/pullbacks occurrence	69%	62%
Average time to throwback/pullback peaks	6% in 7 days	–7% in 7 days
Average time to throwback/pullback ends	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	43%	–14%
Average rise/decline for patterns without throwbacks/pullbacks	48%	–16%
Percentage price resumes trend	75%	49%
Performance with breakout day gap	48%	–14%
Performance without breakout day gap	44%	–15%
Average gap size	$0.63	$0.74

Anyway, I compared the performance of broadening bottoms with and without throwbacks or pullbacks and found that the pattern performs better without a throwback or pullback happening. That's not a surprise because I've seen that behavior in other chart patterns, too.

After a throwback or pullback ends, the stock resumes moving upward 75% of the time after an upward breakout and drops 49% of the time after a downward breakout. Be careful when thinking you

can short after a pullback completes. Price might continue rising instead (51% do).

Gaps. Do breakout day gaps help performance? Sometimes. Gaps are not a big indicator of future performance. I checked the statistics for various types of chart patterns (double bottoms, head-and-shoulders, and so on), and the average performance improvement is one percentage point. Upward breakouts in bull markets saw price climb by two percentage points if they had a gap. That's for all non-Fibonacci chart patterns. In other words, there's not a big performance difference when you average all the numbers together.

For broadening bottoms, gaps help performance by an average of one to four percentage points, depending on the breakout direction. The gap size is slightly larger after a downward breakout, and that might have something to do with how price drops faster than it rises.

Table 8.5 shows pattern size statistics. This is one of my favorite tables because height is usually the best indicator of future performance.

Height. Tall patterns outperform. What is meant by *tall*? Compute the height of the pattern from the top of the broadening pattern to the bottom and divide the result by the breakout price. A tall pattern will have a ratio larger than that shown in the table for the associated breakout direction.

Table 8.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	48%	–17%
Short pattern performance	42%	–12%
Median height as a percentage of breakout price	12.0%	13.2%
Narrow pattern performance	46%	–14%
Wide pattern performance	44%	–16%
Median width	41 days	39 days
Short and narrow performance	39%	–13%
Short and wide performance	49%	–11%
Tall and wide performance	42%	–17%
Tall and narrow performance	63%	–17%

Warning: Just because a pattern is tall does not mean it'll outperform. The numbers are an average of hundreds of perfect trades. Plus, you might flub the trade anyway.

Width. Width is not as strong an indicator for future performance as is height. The table shows an example of this, too. After an upward breakout, narrow patterns outperform but wide ones do better after downward breakouts.

To determine width, measure the calendar days from the start of the pattern to the end and compare the result to the median width in the table. A value higher than the median means it's wide.

Height and width combinations. According to the table for upward breakouts, if tall patterns outperform and narrow patterns outperform, you'd expect the combination of tall and narrow to be the best performer. Indeed, that's what happens, but that's not always the case.

For downward breakouts, tall and wide patterns should outperform, but the results show that anything tall is best. Avoid short patterns.

Table 8.6 shows volume-related statistics. If the height table is my favorite, then volume is at the other end. I think traders put too much emphasis on volume. Remember that for every share sold, one is bought. If an institution buys a gazillion shares, they are probably buying it from another institution that is selling a gazillion shares.

Volume trend. Volume trends higher most often in the chart pattern.

Rising/Falling volume. I sorted performance by the trend direction and found that patterns with a rising volume trend outperform.

Breakout day volume. Heavy breakout day volume only sees improved performance for broadening bottoms after upward breakouts.

Table 8.7 shows how often price reaches a stop location. You can use this information to help locate a stop-loss order, should you decide to use one. I'm not being cute here. Investors (buy-and-holders) should not use a stop in my opinion. Shorter-term traders would be wise to use a well-placed stop or a mental stop (if you have the willpower to obey that).

I sliced the chart pattern in half and measured how often price during a trade returned to touch the top, middle, or bottom of the chart pattern. See the Glossary ("Stops") for details on how I did this in case you're interested. (*Hint:* I didn't use power tools.)

Table 8.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	65% up	67% up
Rising volume trend performance	46%	–15%
Falling volume trend performance	43%	–14%
Heavy breakout volume performance	46%	–15%
Light breakout volume performance	43%	–15%

Table 8.7 How Often Stops Hit

Description	Up Breakout	Down Breakout
Pattern top	77%	1%
Middle	23%	15%
Pattern bottom	3%	73%

Table 8.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	40%	–17%
2000s	46%	–14%
2010s	46%	–14%
Performance (above), Failures (below)		
1990s	15%	13%
2000s	17%	30%
2010s	17%	31%

If you place a stop at the top of the pattern, price will take out the stop 77% of the time after an upward breakout. Downward breakouts will only reach the top of the pattern 1% of the time. That makes sense, doesn't it?

Table 8.8 shows the performance over three decades. How has the pattern performed over time? Let's find out.

Performance over time. Upward breakouts in the 1990s suffered but downward breakouts did better. I can't explain why. The 2000s contained not one but two bear markets, but I excluded those results from the table.

Failures over time. The 1990s were the worst performers, but they have the best (lowest) failure rates. Again, this puzzles me. Because the failure rate is a function of performance, then I'd expected patterns that showed big moves to have lower failure rates. They don't.

Table 8.9 shows busted pattern performance. At one time, I thought that busted patterns were the way to make a bundle trading chart

patterns. They can be, but it's not as easy as you might expect.

Busted patterns count. I counted the number of busted patterns and found that 42% of broadening bottoms with downward breakouts will bust. *Ouch*. It's less painful for upward breakouts, with a quarter of them busting.

Busted occurrence. If we sort the busted patterns into three bins, single busts, double busts, and three or most busts (triple+), we see the results in the table. Notice that most of the busts are single ones.

Busted and non-busted performance. The last three lines in the table show the performance of busted and non-busted ones. Notice that single busted patterns perform better than all busted patterns (single, double, triple+) and also beat the non-busted pattern performance.

Perhaps now you understand why trading busted patterns might be the way to riches. Probably not, but we can dream. Try looking for a single busted downward breakout from a broadening bottom. Then try to carve out a portion of the 46% average rise.

Trading Tactics

Table 8.10 shows trading tactics for broadening bottoms.

Measure rule. The first tactic is to determine how much money you are likely to make in a trade. The measure rule helps with the prediction, but it's not a guarantee.

To use the rule, compute the height by subtracting the highest high from the lowest low in the broadening bottom. Add the results to the highest high to get the target price for upward breakouts and subtract the height from the lowest low for downward breakouts.

For downward breakouts, if the prediction says the stock will drop below zero, then ignore it. For both breakout directions, use common sense. A large gain or loss probably won't occur.

The bottom portion of the table shows how well the measure rule works. Based on the full height, a stock will reach an upward target 65% of the time, but a downward target is harder to reach. It works just 41% of the time.

You can change the height in the computation to assess how often price will reach a target. I provide a few possibilities (from half the height to three times).

Let's use Figure 8.5 to make the computation clear. Point A shows the highest high in the chart pattern at 14.13. The lowest low is point B at 12. The formation height is the difference between the two, or 2.13. Add the value to the high to arrive at the upward price target, or 16.26.

Table 8.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	149 or 25%	169 or 42%
Single bust count	84 or 56%	111 or 66%
Double bust count	40 or 27%	8 or 5%
Triple+ bust count	25 or 17%	50 or 30%
Performance for all busted patterns	–15%	32%
Single busted performance	–24%	46%
Non-busted performance	–15%	45%

Table 8.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the difference between the highest high and the lowest low in the broadening bottom. Add or subtract this value from the breakout price. The result is the target price for upward and downward breakouts, respectively. The bottom portion of this table shows how often the measure rule works.
Go long at the low	After recognizing a broadening pattern, buy after the stock makes its turn at the lower trendline.
Long stop	Place a stop-loss order 15 cents below the prior minor low to protect against a trend reversal.
Go short at the high	Sell short after price starts down from the top trendline.
Short stop	Place a stop 15 cents above the minor high to protect against an adverse breakout. Cover the short when price turns at the bottom trendline and starts moving up. For a downward breakout, cover as it nears the target price or any support level.
Move stops	Raise or lower the stop to the next closest minor low or high once price makes a new high (for long trades) or low (for short sales).
Partial rises/declines	If a broadening bottom shows a partial decline or rise, trade accordingly (on a partial decline, go long; on a partial rise, short the stock). Partial rises work 53% of the time, and partial declines work 73% of the time.
Stop location	Use Table 8.7 to help determine stop location.
Busted trade	Busted patterns perform slightly better than non-busted ones. See Table 8.9.

Description	Up Breakout	Down Breakout
Percentage reaching half height target	81%	70%

Description	Up Breakout	Down Breakout
Percentage reaching full height target	65%	41%
Percentage reaching 2× height	46%	18%
Percentage reaching 3× height	35%	7%

For the downward target, subtract the height from the lowest low (that is, 12 – 2.13 or 9.87). You can see in Figure 8.5 that the price never quite reaches the downward price target.

Go long at the low. Once you have uncovered a broadening bottom with the identification guidelines met, you can think about trading it (as price crosses from side to side).

When the price bounces off the lower trendline, buy the stock. Sell when price turns down. The downturn may occur as a partial rise partway across the chart pattern, or price may cross completely to the other side, touch the top trendline, and head down. Remember, the formation may stage an upward breakout, so don't sell too soon and cut your profit short.

Long stop. In a rising price trend, place a stop-loss order 15 cents below a prior minor low. Should the stock reverse and head down, you will be taken out with a small loss. As the stock rises to the opposite side of the chart pattern, move your stop upward to 15 cents below the prior minor low. The minor low may act as support, so you will be giving the stock every opportunity to bounce off support before being cashed out.

Go short at the high. The trading tactic for downward breakouts is the same. When price touches the top trendline and begins moving down, short the stock. Only advanced traders should attempt to short a stock.

Short stop. Place a stop-loss order 15 cents above the highest high in the formation, then pray that price declines.

Move stop. If luck is on your side and the stock heads down, move your stop lower. Use the prior minor high—place the stop 15 cents above it.

Partial rises/declines. If the stock makes a partial rise or decline, consider acting on it. The table shows how often they work (partial declines work best). Take advantage of them when they appear, but make sure you place a stop-loss order in case the trade goes bad.

Once price breaks out from the broadening pattern, consider selling if the price nears the measure rule target (this is most useful for short-term swing trades). There is no guarantee that the price will hit or exceed the target, so be ready to complete the trade, especially if there is resistance between the current price and the target. The stock may reach resistance and turn against you.

Stop location. Table 8.7 shows how often price will reach one of three locations in the chart pattern. The results give you some indication of how risky a stop location may be. You may wish to consider using a volatility-based stop. See the Glossary ("Volatility stop") for sliated (that's *details* spelled backward).

Busted trade. Busted patterns, on average, outperform the non-busted counterparts. Table 8.9 discusses options for trading busted patterns.

Experience

Let me tell you about what I found in my trade review.

Southwest Airlines

Southwest Airlines (LUV) hit turbulence in late 1999 going into the start of 2000. A broadening bottom formed. Here's my notes from my trading notebook: “25 January 2000. I bought at market as the stock was moving up off the bottom of a broadening bottom chart pattern. At 15 3/8 [not split adjusted], the stock is cheap and shows support at this level. Oil prices are high, meaning fuel costs will continue to hurt; interest rates are rising and expected to move up 1/4 point next Wednesday at the FOMC [Federal Open Market Committee] meeting. However, as a long-term holding, it's a good price to add to my position. I only bought a few shares because this could break down through the bottom of the pattern and move lower. In that case, I'll buy more. If fuel costs were stable, the earnings of this beast would improve (according to a *Wall Street Journal* article), so it's a good buy even though the general market is trending lower.”

As I read this, I see lots of warning signs, especially with the market trending lower. You want to trade with the trend, not try to push against it. However, I bought at the right time because the stock lifted off the runway (at the bottom trendline) and climbed.

The stock threw back and bottomed at the price of the bottom trendline again before making its way up to cruising altitude.

Fast-forward to June 2000. Price had peaked and had retraced 18% off the high set in early May. Here's my notebook entry for the sale: “27 June 2000. I sold my entire holdings because the stock has pierced the support base of a descending triangle [meaning the triangle had a downward breakout]. With seasonal performance moving up in December and peaking in the spring, I missed the high by about $3/share. *Ouch*. Oil prices are high, raising fuel costs, and interest rates are still high, maybe moving up more. So, it looks like the excitement is over although today the stock is up almost $1.”

I sold and made 27% on the trade. As good as that sounds, I sold at the day the stock bottomed. After that, it climbed by 89%. Well, spit! This keeps happening if you read about my trades. The day I sell the

stock bottoms and makes a substantial rise. It's one of those *Catch-22* scenarios. If I hold on, the stock will continue down. If I sell, it'll double in price, thumbing its nose as I watch from the sidelines.

- Lesson: Assess how far price might drop before selling. The trade might be worth holding onto longer if the downside risk is limited.

Hercules Inc.

I wrote about Hercules Inc. (HPC) as a potential pipe bottom trade (weekly scale), but it's also a broadening bottom on the daily scale. Let me tell you how I traded the broadening bottom.

The stock made a nice-looking broadening bottom in May and June 2007. It included a partial decline that correctly predicted an upward breakout.

Did I take advantage of the partial decline? No. My notes don't tell why, either. I bought the day after an upward breakout. A better move would have had a buy stop placed at the top of the broadening bottom for a more timely and lower-priced entry. Or I could have bought earlier because of the partial decline (which is more risky).

Here's my notebook: “Buy reason: Broadening bottom and potential pipe bottom. This is also a measured move up pattern [MMU]. The MMU began in August 2006 and peaked in March, corrected to [the] June low, and is now moving up in the second leg.”

If the measure move were to fulfill its promise, I'd make a bundle because the pattern was huge. The first leg rise was 60%. If the second leg was close to the same length, well, I'd be happy.

Additional notes to the trade were skeptical of the measured move working as expected, even after taking half the first leg height and using that as a projection for a target. “Just 45% meet the target so it's likely this will die at the old high [21.40].” Half height target came out to be 21.52, suggesting a stall at the old high.

This was a swing trade, a short-term one where the potential profit from where I bought wasn't big. I used a volatility-based stop and raised it four times along the way to 27 July, when I was stopped out.

The market dropped 500 points over 2 days, and it pulled the stock down far enough to trigger the stop.

I sold at 20.36 and made just 1% on the trade. That was just 3 trading days after the stock peaked at 22.48. So I got close to a perfect exit.

The stock appeared to make a 2B pattern. Price exceeded the old high of 21.40 by coasting up to 22.48 before moving below 15 in a series of rollercoaster swings. If I had placed an order to sell my shares at the 21.40 target, I'd have done better.

- Lesson: A better entry was to have a buy stop set at a penny above the top of the chart pattern and not wait for confirmation. The partial decline correctly signaled an upward breakout, so that would help boost confidence that a lower entry price was the correct choice.
- Lesson: For short-term swing trades, set a limit order to sell at the target price.

Sample Trade

Sharon likes to think of herself as the brains in the family. While her husband is suffering in foul weather as a carpenter, she is hammering away at her keyboard, a slave to her computer masters. She uses profit from her swing trading to build their emergency fund. “Last month I found a pair of Manolo Blahniks.” She sighed. “It was a shoe emergency.” She glanced at me.

My eyebrow ticked up. “A shoe emergency?”

She nodded. “Let me show you…”

We're old friends, so I grabbed her arm. “Stop right there!” I knew that once she started showing me her collection, I'd be there all day.

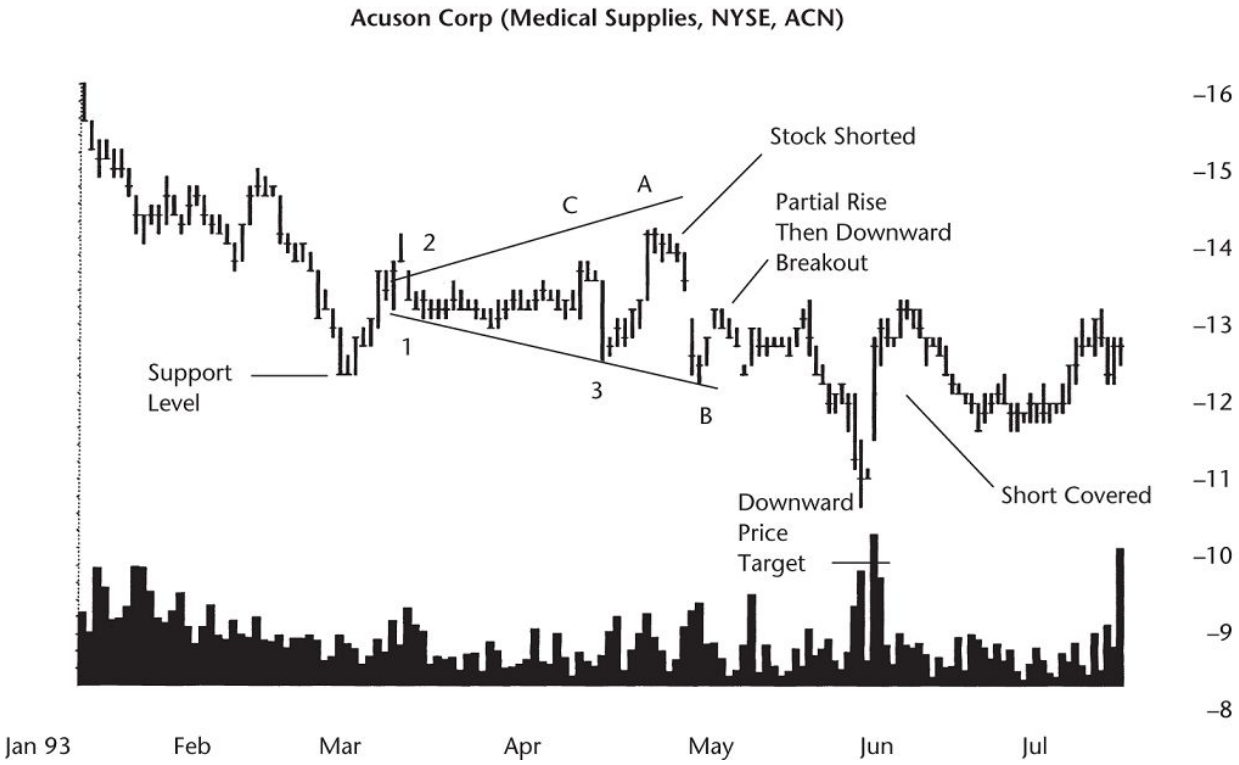


Figure 8.5 A broadening bottom with five alternating touches. Expect an immediate downward breakout because a partial rise appears.

Sharon is not afraid to short a stock, given good profit potential and an especially weak fundamental or technical situation. It is a stressful life, but making money often is.

“When I spotted the broadening bottom,” she said (shown in **Figure 8.5**), “I became interested.”

The stock reached a high of 37.38 in early November 1991 and had been heading down since.

“With the stock trading at 14, I wondered how much downside remained, so I drew the two trendline boundaries and counted the number of alternating touches.” Three are labeled as numbers in the figure and points A and B are the remaining touches.

“Because the stock was near A, heading down, I guessed that it would break out downward on the next cross. I did research to try to prove it, and then I shorted the stock at 13.88. It was a gamble, but one I was comfortable with. I placed a stop at 14.25, just above A.”

She snapped her fingers, “Bingo! Two days later the stock plummeted to the other side of the pattern,” touching the bottom trendline at point B. “Usually my trades aren't that easy. I lowered my stop to 15 cents above C [the nearest minor high], and waited.”

The stock bounced off the lower trendline instead of busting through as she hoped. She decided to be patient and see what the stock did next. With her stop-loss order in place at the breakeven price, she felt protected and comfortable letting the trade ride.

A partial rise formed before meeting resistance and heading back down. “I believed that when the stock reached the bottom trendline, it would break out downward this time, so I doubled my position.”

She sighed. “I was wrong.”

“It takes a big man to admit that,” I said and winked at her. The stock continued down one more day before easing higher.

“I adjusted my stop-loss order to include the additional shares, but kept it at the same price [13.75, C]. Then I waited.”

The stock reached a minor high of 13.13 before heading down again. This time the decline was strong enough to punch through support at the lower trendline.

“When the stock dropped below point B toward the end of May, I lowered my stop to 15 cents above B,” or 12.15.

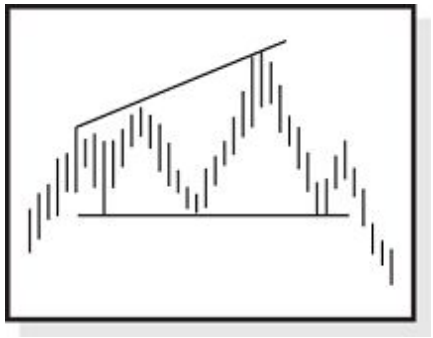
She looked at the measure rule for the price target. She calculated a target of 9.88 and wondered if the stock would really reach that price. To be safe, she decided to cash out if the stock reached 10.15, or 15 cents above the common support price of 10 (a whole number typically shows support and resistance).

“The stock hit 10.38 on high volume. I thought it might be a one-day reversal.” With those chart patterns, it's difficult to be sure if price would reverse or not. “I decided to hold on and kept my original target in place.”

She pointed at the screen, “Two days later, the stock zipped higher and tagged my stop. I made only 9% and moved the profit into our emergency fund.”

She looked at her watch and gasped. “There's a shoe store having a liquidation sale in twenty minutes. They sell Jimmy Choos. I have to go.” She raced out of the room.

9
Broadening Formation, Right-Angled and Ascending



RESULTS SNAPSHOT

Appearance: A chart pattern with a horizontal (or near-horizontal) bottom and up-sloping top.

Upward Breakouts

Reversal or continuation	Long-term bullish continuation
Performance rank	18 out of 39
Breakeven failure rate	15%
Average rise	43%
Volume trend	Upward
Throwbacks	68%
Percentage meeting price target	67%

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	25 out of 36
Breakeven failure rate	28%
Average drop	14%
Volume trend	Upward
Pullbacks	63%
Percentage meeting price target	40%

Before I began studying this chart pattern, I assumed price would climb away from it, simply because the word *ascending* was in the title. However, I believe the title refers to how the top of the pattern sees price trending upward, bouncing off a flat base.

The pattern is a mid-list performer, based on the rank. Even the breakeven failure rates are mid-list (not shown in the above Results Snapshot). They are within a point of the performance rank. Volume trends upward in the pattern, and I find that unusual when compared to other chart pattern types.

Throwbacks and pullbacks happen about twice in every three trades, so don't be fooled if the stock returns to the breakout price within a week or so.

The percentage meeting the price target, at 67% for upward breakouts, is much higher than the 40% rate for downward breakouts, but that's typical. A downward breakout is fighting against a rising general market, so you'd expect the stock to drown.

Let's take a tour to see what this pattern looks like.

Tour

Figure 9.1 puts the formation in perspective. There are two right-angled broadening patterns shown in the chart. The left one is somewhat ill-formed but better performing than the right. Both chart patterns have a base outlined by a horizontal trendline connecting the minor lows. The up-sloping trendline skirts the tops of the minor highs. The result is a triangle-appearing pattern with prices that broaden out. Both of these patterns have downward breakouts, but the breakout could have been upward, too. In fact, upward breakouts are favored (slightly).

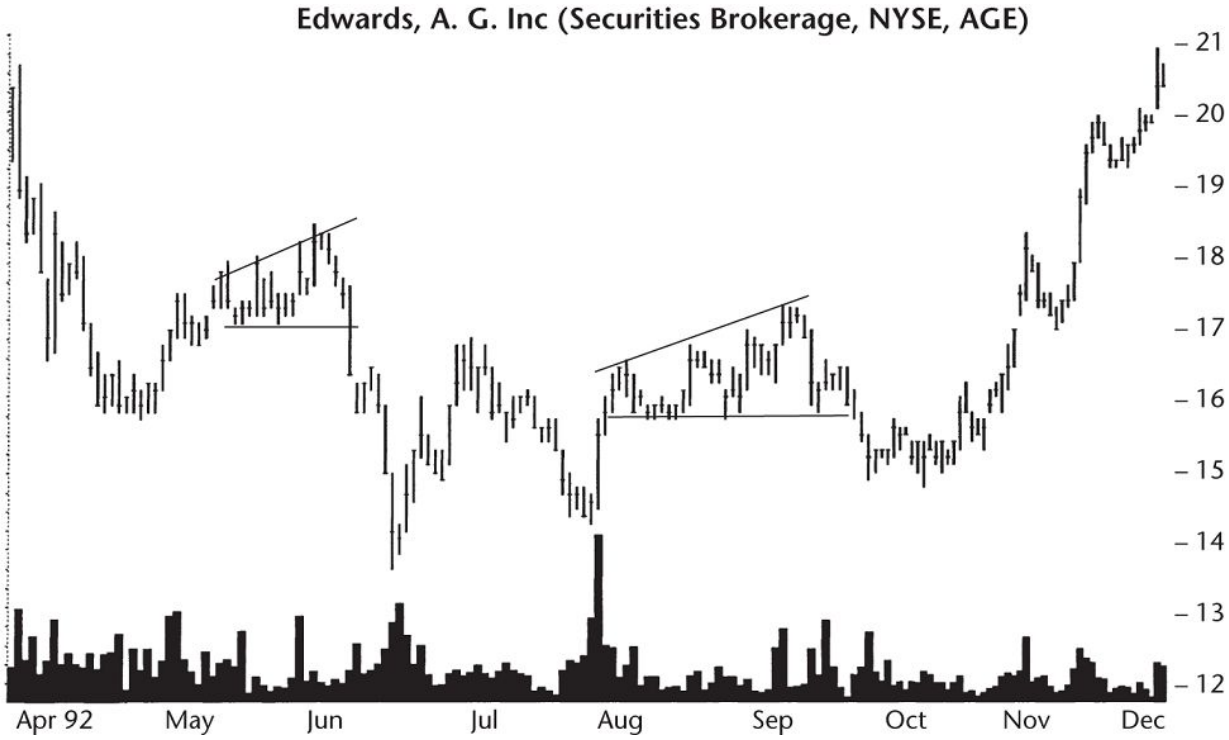


Figure 9.1 Two right-angled ascending broadening formations bounded by a horizontal base and up-sloping trendline. Price declines after a downward breakout.

Why do right-angled ascending broadening formations form? Consider Figure 9.2. The rise began in mid-December 1991 on volume that was higher than anything seen in the stock for almost 2 months. By late February, the stock had reached a new high and was rounding over after meeting selling resistance at 14. The stock returned to 12.25 where it found support. At that point, it paused for

about 2 weeks and established the base on which a trader could start to draw a horizontal trendline.

The reason for the horizontal trendline is one of perceived value. As the stock approached the $12 level, more investors and institutional holders purchased the stock. The desire to own the stock at what they believed a good value outweighed the reluctance of sellers to part with their shares. The buying demand halted the decline in the stock and eventually sent price skyward again. This happened in mid-April as volume spiked along with price. The buying enthusiasm caused the stock to reach a new high.

Momentum was high enough so that the next day, price rose even further before closing lower. With the second peak, a tentative trendline drawn along the tops of the formation sloped upward and gave character to the broadening formation.

The stock moved rapidly back down even as volume increased. This decline stopped before it reached the lower trendline, signaling continued buying pressure. Price pushed higher and reached a new high, this one at 15.50 on 6 May. The up-sloping trendline resistance area repelled any further advance (or so I like to think). The stock simply did not have enough upward momentum to push through the selling pressure at the new level.

Figure 9.2 Price pulls back to the base of the formation. Pullbacks occur often in ascending broadening formations.

The next day volume dried up, but there was enough momentum remaining for another try at the summit. When the attempt failed, the smart money headed back to base camp and volume receded further. As price collapsed, other investors joined in the retreat and volume moved up. In less than 2 weeks, price was back at the lower trendline.

Another feeble attempt at a new high floundered on unremarkable volume. The stock moved horizontally and stalled out—a partial rise that often spells trouble for bulls. On 4 June, price dropped on high volume and returned to the horizontal trendline. The stock paused there for just over a week before moving down and punching through the support level at 12.25.

A pullback in bull markets is quite common for ascending broadening formations, so it is no surprise that after a rapid 13% retreat, the stock turned around and pulled back to the base of the pattern. Although not shown in the figure, the stock continued moving upward until it began forming another ascending broadening pattern in late October with a base at 16.50.

The ascending broadening formation represents the desire of investors and traders to own the stock at a fixed price, in this case about 12.25. Their buying enthusiasm pushes price higher until mounting selling pressure causes a halt to the rise and sends the stock tumbling. With each attempt, fewer people are left willing to sell their shares until they receive an even higher price, so a broadening range of prices appears at the top.

Eventually, the buying enthusiasm at the base of the pattern collapses and removes the support for the stock. A downward breakout occurs when the stock punches through the support level and declines. It continues moving down until reaching a point where other investors perceive significant value and buy the stock.

Upward breakouts see price continue the fight with the bulls overwhelming the bears. Sometimes, the stock will bump up against overhead resistance set up by extending the top trendline from the broadening pattern. It's as if the bulls know there's a turn coming (at the extended trendline), so they back off and let selling pressure take the stock down again.

Identification Guidelines

How do you find an ascending broadening formation? To answer the question, read the selection guidelines outlined in **Table 9.1**. Microscopes or telescopes are optional. While chewing on the table, look at **Figure 9.3**, an ascending broadening formation on the weekly scale.

Table 9.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a megaphone with the base of the formation horizontal and bounded on the top by an up-sloping trendline.
Horizontal bottom support line	A horizontal, or nearly so, trendline that connects the minor lows.
Up-sloping top trendline	An up-sloping trendline bounds the expanding price series on top.
Touches	Look for at least five trendline touches, three on one trendline and two on the other.
Whitespace	Price should bounce from trendline to trendline, overwriting whitespace from the pattern.
Price action before breakout	Price sometimes moves horizontally for many months before moving outside the formation high or low.
Breakout direction	Price can break out of the pattern in either direction, but favors an upward breakout.
Volume	Trends upward most often.
Support and resistance	Follows the two trendlines into the future.

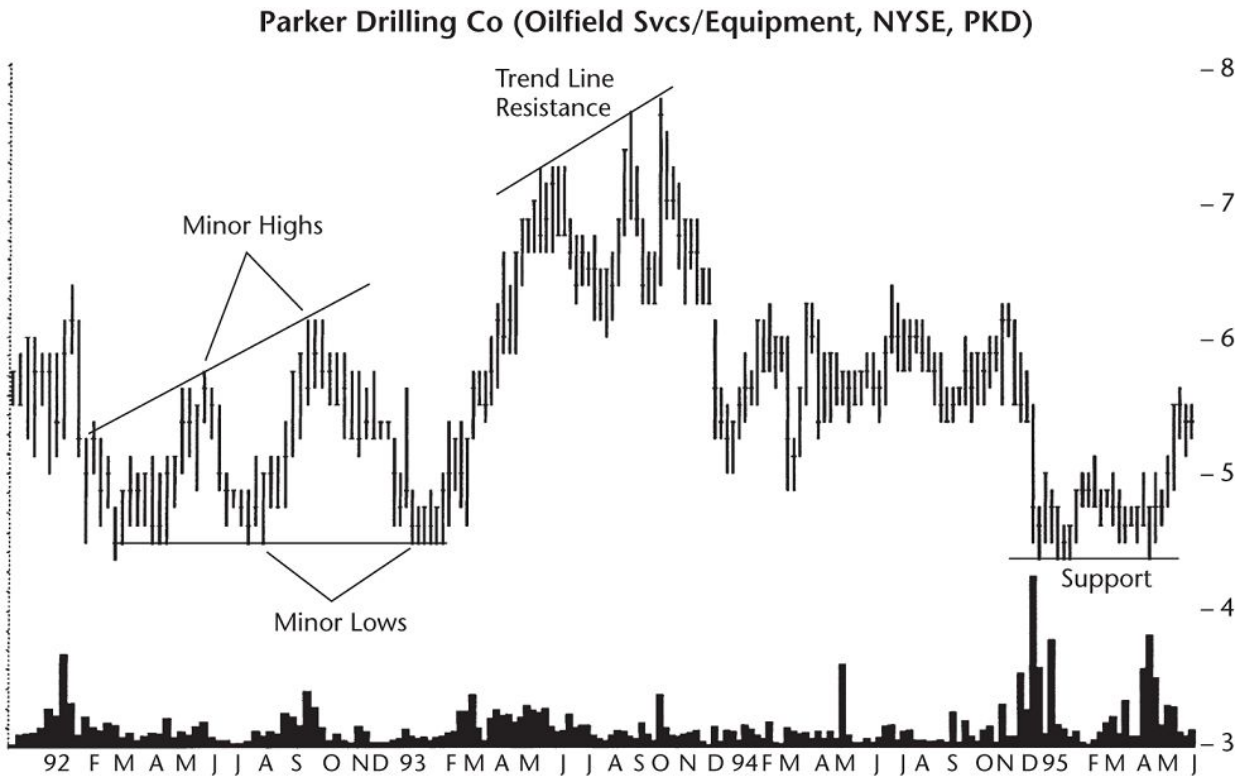


Figure 9.3 Support and resistance areas on a weekly time scale. They appear along the trendline axis and can extend far into the future, as in this case.

Appearance. The overall shape of the formation looks like a megaphone with the bottom of it horizontal.

Horizontal bottom support line. The bottom of the pattern follows a horizontal trendline while an up-sloping trendline bounds the top. Look for price to come close to or touch the trendline at least twice in distinct minor lows.

Up-sloping top trendline. Price should touch the top trendline at least twice, in two minor highs.

Touches. Price should come near to or touch each trendline in minor highs or minor lows. At least five touches are needed to qualify the pattern, but be flexible. Don't count it as a touch when price slices through a trendline. That often occurs at the start and breakout from the pattern. If price doesn't touch a trendline at a minor high or minor low, then it doesn't count as a touch.

Whitespace. Price should bounce across the pattern from top to bottom frequently, filling the whitespace with price movement.

Price action before breakout. In some ascending broadening formations, price moves sideways for many months while trying to decide on a breakout direction. Eventually, price rises above the formation top or slides through the bottom trendline and stages a breakout.

Breakout direction. The breakout favors an upward direction, but it's almost random. A breakout occurs when price closes outside the trendline boundary.

Volume. The volume trend is usually upward. Don't discard a chart pattern because volume trends in a direction different from what you expect.

Support and resistance. I chose Figure 9.3 because it shows the two common areas of support and resistance. These areas follow the trendlines. Along the base of the formation projected into the future, the support area repels the decline over 2 years after the formation ends. The rising trendline tells a similar tale; it repels price three times nearly a year later.

The implications of this observation are profound. If you own a stock and it is breaking out to new highs, it would be nice to predict how high price may rise. One way to do that is to search for formations such as this one. Many times, extending the trendlines into the future will predict areas of support and resistance.

Although the trendline did not predict the absolute high, it did suggest when price would stall. The resistance area turned out to be a good opportunity to sell the stock.

Focus on Failures

Figure 9.4 shows a failure that's typical for most chart patterns: It's called a 5% failure.

Price bounces between the two trendlines plenty of times, forming a right-angled and ascending broadening formation, A. Price along the bottom sometimes pierces the horizontal support line (B) and sometimes it falls short. It's close enough, though, to give us enough minor low touches.

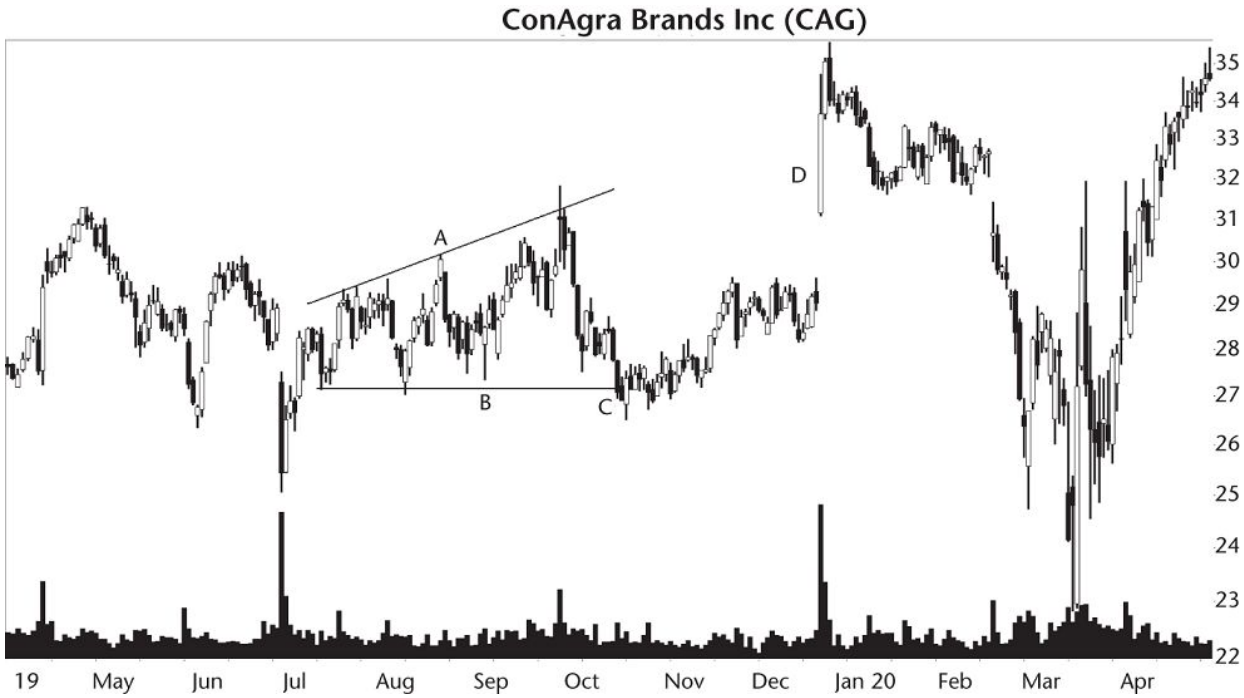


Figure 9.4 The broadening formation breaks out downward, but the stock fails to see price drop far.

Depending on how you draw the horizontal line along the bottom of the chart pattern, the breakout happens at C when the stock closes below the line.

Price makes a lower low before recovering. It's like dipping your toe into water (just after the breakout), finding it too cold for a swim, and scurrying back indoors (when price rises). Price busts the downward breakout at D when a breakaway gap sends price soaring.

Unfortunately, these types of failures happen too often in chart patterns. If you own the stock and it fails to drop more than 5%, then

you're in good shape. If you sell a long holding expecting a big decline and it fails to provide one, you might be upset. Chill out. You'll never get out of this life alive.

I don't know of many tips to share that limit these types of failures. One tip is to look at the market trend. If the general market is trending higher, that's a plus. If it's moving sideways, I can live with that, too, but know the ride might be bumpy. A downward trend spells trouble. Do I really want to swim against the current and risk being run over by a jet skier?

I do the same check for stocks in the industry. I count how many are rising over the past 6 months. If I follow a dozen stocks in the industry and nine of them are rising, then that's good. Too many trending lower could spell a problem for a bullish trade.

Finally, after checking the general market and checking the industry health, I'll look at the stock. On the weekly or monthly scale, if the stock has been trending lower for years, then I won't buy it. If it's been making new highs, trending upward in a nice 30- to 45-degree slope, then I feel reassured that the uptrend will continue. That's a momentum play.

Ask yourself this: How long will the uptrend continue? Is buying now closer to the start of the trend or the end? Of course, we won't know for sure until much later, but I want to avoid uptrends that end just after I buy. When that happens, it really pisses me off.

On a shorter-term scale, look for overhead resistance and underlying support to help gauge where the stock might reverse.

Statistics

Table 9.2 shows general statistics for this chart pattern.

Number of formations. I found 1,223 patterns in stock data from July 1991 to October 2019 in 703 stocks. However, after slicing-and-dicing the bear market samples, there were too few to present here. So the following tables only show bull market statistics. Not all stocks covered the entire range, and some no longer trade.

Reversal (R), continuation (C) occurrence. Because the inbound price trend can come from any direction, we can't claim this pattern is a bottom or a top. But we can compare the inbound trend with the direction after the breakout. If the two are in the same direction, then the pattern acts as a continuation of the prevailing price trend.

If price enters the pattern from the top and exits out the top, that's a reversal. The same can be said if price enters from the bottom and breaks out downward (it's also a reversal).

Upward breakouts act as continuations most often, so we know the inbound price trend must have been upward, too. Downward breakouts act more often as reversals (suggesting price was trending upward into the pattern).

Reversal/continuation performance. Reversals for both breakout directions show better performance than continuations.

Average rise or decline. The average rise or decline isn't exceptional. As I mentioned, this pattern is a mid-list performer, so don't expect a standing ovation.

Table 9.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	551	455
Reversal (R), continuation (C) occurrence	25% R, 75% C	76% R, 24% C
Reversal/continuation performance	47% R, 41% C	–15% R, –14% C
Average rise or decline	43%	–14%
Standard & Poor's 500 change	12%	–2%
Days to ultimate high or low	243	51
How many change trend?	55%	25%

Standard & Poor's 500 change. The performance of the chart pattern beats the tar out of the index. I can't think of any pattern that failed to beat the general market results. That suggests the measure favors the chart pattern.

The chart pattern is performing at its best, from the breakout to the ultimate high or low. But the index, using the same dates, may fall well short of what it's capable of. However, the numbers also show how the general market assists individual stocks to perform. The market rises during upward breakouts and falls during downward ones.

Days to ultimate high or low. How long will your trade last? It lasts as long as you do not close out your position. However, I measured the average hold time from the breakout to the ultimate high or low.

Pop quiz: If it takes 243 days for price to rise 43% after an upward breakout, how long should it take price to drop 14% after a downward breakout, assuming the same velocity? Answer: 79 days. However, the table shows that it completes the trip in just 51 days. Thus, price drops much faster after a downward breakout than it rises in an uptrend. Often, price drops twice as fast.

How many change trend? In a gauge of how well price moves more than 20% from the breakout, this pattern does well. However,

it's still a mid-list performer. Have I mentioned that?

Table 9.3 shows failure rates for the broadening pattern. For example, I found that 15% of the patterns with upward breakouts failed to see price rise more than 5% after the breakout. Downward breakouts failed almost twice as often. Yuck.

Notice as you scan down the list how failure rates increase. Half of all upward breakouts will see price fail to rise 25%. Downward breakouts see half the patterns failing to rise more than 10%.

If you want to average 50% on your trades, 72% of them will fail to meet the threshold after an upward breakout. And that's if you trade it often and perfectly. You could make more or less, depending on your skill and the situation (such as just after a bear market ends when even the losers are winning). Sprinkle in some losing trades and your winners will have to make even more to reach your 50% target.

Table 9.4 shows breakout-related statistics.

Breakout direction. The breakout direction is almost random with a slight advantage going to upward breakouts.

Yearly position, performance. I sorted the breakout price into the yearly high–low range and mapped performance on top of it. The table shows that breakouts occurring near the yearly low do better than those near the yearly high. It suggests this chart pattern does well with bottom-fishing strategies (buy low, sell high). Avoid momentum trading this pattern (buy high, sell higher).

Throwbacks and pullbacks. Throwbacks and pullbacks occur about two-thirds of the time. Price leaves the pattern for 6 days until it reaches the apex, either rising or falling 6% during the journey (depending on the breakout direction), and the stock returns to the breakout in another 6 days, for a 12-day roundtrip.

Table 9.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	83 or 15%	129 or 28%
10	71 or 28%	106 or 52%
15	62 or 39%	62 or 65%
20	32 or 45%	44 or 75%
25	40 or 52%	28 or 81%
30	30 or 58%	22 or 86%
35	24 or 62%	19 or 90%
50	56 or 72%	35 or 98%
75	52 or 82%	10 or 100%
Over 75	101 or 100%	0 or 100%

Table 9.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	55% up	45% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 58%, M 43%, H 40%	L –17%, M –14%, H –12%
Throwbacks/pullbacks occurrence	68%	63%
Average time to throwback/pullback peaks	6% in 6 days	–6% in 6 days
Average time to throwback/pullback ends	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	39%	–13%
Average rise/decline for patterns without throwbacks/pullbacks	50%	–16%
Percentage price resumes trend	72%	48%
Performance with breakout day gap	48%	–16%
Performance without breakout day gap	42%	–14%
Average gap size	$0.50	$0.40

Notice that performance improves if a throwback or pullback *does not* occur.

After a throwback or pullback completes, we see that price resumes trending upward after an upward breakout but struggles to drop after a downward breakout. Be careful shorting this pattern after a downward breakout. A pullback may see price drop as far as it's going to.

Gaps. Regardless of the breakout direction, a breakout day gap helps performance. That's good news. Why? Because I measured performance from the opening price the day *after* a gap to the ultimate high or low. Thus, you can buy into the situation after you see a gap and participate in the better-performance party.

Table 9.5 shows size-related statistics.

Height. For both breakout directions, broadening patterns taller than the median height performed better than did their shorter counterparts.

To use this finding, measure the height of the pattern from top to bottom and divide by the breakout price. If the result is higher than the median listed in the table for the associated breakout direction, then the pattern is tall.

Width. Wide patterns performed better than narrow ones. Take the difference between the end date and start date of the pattern and compare it to the median width in the table. Wide patterns will exceed the median.

Height and width combinations. Tall and wide patterns outperform all other combinations. As a general rule for this pattern, avoid tall and narrow patterns with upward breakouts and avoid short and narrow patterns with downward breakouts.

Table 9.6 shows volume-related statistics.

Volume trend. I used linear regression to determine the volume trend. I found that it trends upward in almost two of every three patterns.

Rising/Falling volume. Upward breakouts don't show a big performance difference between volume trending upward or downward. Downward breakouts tend to prefer falling volume for better performance.

Table 9.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	45%	–17%
Short pattern performance	40%	–12%
Median height as a percentage of breakout price	10.6%	11.4%
Narrow pattern performance	40%	–13%
Wide pattern performance	46%	–16%
Median width	50 days	48 days
Short and narrow performance	40%	–11%
Short and wide performance	40%	–14%
Tall and wide performance	48%	–17%
Tall and narrow performance	39%	–16%

Table 9.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	63% upward	62% upward
Rising volume trend performance	42%	–13%
Falling volume trend performance	43%	–16%
Heavy breakout volume performance	44%	–15%
Light breakout volume performance	39%	–12%

Table 9.7 How Often Stops Hit

Description	Up Breakout	Down Breakout
Pattern top	74%	2%
Middle	22%	17%
Pattern bottom	2%	70%

Breakout day volume. Heavy breakout volume helped the pattern perform for both breakout directions. That finding matches conventional lore where lots of sources claim that a high volume breakout helps. Here's the proof for this chart pattern. However, a survey of the chart patterns says it's only true for upward breakouts, not downward ones.

Table 9.7 shows how often price reaches a stop location. I split the pattern into thirds and found how often price as it moved from the breakout to the ultimate high or low slid into one of the thirds.

For example, I found that price on the way to the ultimate high (upward breakouts) would touch the top of the chart pattern 74% of the time. So a stop placed there would trigger too often to be viable. If you moved the stop to the bottom of the pattern, price would reach it only 2% of the time, but if it were to trigger, you might see a big loss.

Thus, stop placement, where you have to balance the loss size with how often it'll be triggered, is something traders need to master.

Table 9.8 shows the performance over three decades.

Performance over time. The 2010s, for upward breakouts, showed the worst performance for this chart pattern compared to the other two decades. For downward breakouts, the 2000s were worst. I excluded the two bear markets during that decade, too.

Failures over time. The most recent decade, the 2010s, showed substantially higher failure rates than the 1990s. I'm not sure why that is.

Table 9.9 shows busted pattern performance.

Busted patterns count. A quarter to nearly half of broadening patterns will bust. That means price moved no more than 10% away from the breakout price before reversing and closing beyond the other side of the pattern.

Table 9.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	41%	–16%
2000s	50%	–13%
2010s	36%	–14%
Performance (above), Failures (below)		
1990s	10%	20%
2000s	13%	34%
2010s	23%	33%

Table 9.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	146 or 26%	220 or 48%
Single bust count	77 or 53%	140 or 64%
Double bust count	45 or 31%	10 or 5%
Triple+ bust count	24 or 16%	70 or 32%
Performance for all busted patterns	–14%	33%
Single busted performance	–23%	49%
Non-busted performance	–14%	43%

Busted occurrence. I counted how often price single, double, or triple (or more) busted a pattern. See the Glossary for details. Single busts happened the most. You might think that triple busts would be rare, but they often come in second place (which they do here, but only for downward breakouts).

Busted and non-busted performance. I compared the performance of all busted patterns, single busted patterns, and non-busted patterns. I wanted to know if busted patterns performed better than non-busted ones.

The table shows that single busted patterns performed better than the other two categories. The problem with a single bust is you don't

know ahead of time that a pattern will single bust.

Non-busted patterns performed better after downward breakouts compared to all busted patterns. *All busted patterns* means it's the average for the three busted types (single, double, and three or more).

Trading Tactics

Table 9.10 lists trading tactics.

Measure rule. The measure rule sets a target price, but it makes no guarantee that price will reach it.

Table 9.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height from highest high to the horizontal trendline. For upward breakouts, add the height to the highest high in the pattern. For downward breakouts, subtract the height from the value of the horizontal trendline. The result is the target price. More accurate targets use a formation height divided by 2. The bottom portion of the table shows how often the measure rule works.
Partial rise or decline	Use a partial rise or decline as an entry signal. A partial rise works 61% of the time and a partial decline works 80% of the time in correctly predicting the breakout direction.
Intraformation trade	For tall patterns, buy near the lower trendline and sell near or at the top when price stops rising.
Stop location	Use Table 9.7 for help placing a stop.
Busted trade	Table 9.9 may help you decide to trade a busted pattern.

Description	Up Breakout	Down Breakout
Percentage reaching half height target	86%	68%
Percentage reaching full height target	68%	40%
Percentage reaching 2× height	50%	19%
Percentage reaching 3× height	37%	9%

To use the rule, compute the pattern's height, the difference between the highest high and the horizontal trendline in the formation. For upward breakouts, add the height to the highest high in the pattern. For downward breakouts, subtract the height from the value of the horizontal trendline. The result is the target price.

The lower portion of the table shows how often price reaches the target for various heights. For example, if you use the full height, price will reach the target between 40% and 68% of the time, on average, if your patterns are like the ones I tested.

For a more conservative target, calculate the height, divide by 2, and then apply the result to the pattern's high or low price.

Figure 9.5 makes applying the measure rule clearer. The height of the formation is the difference between the highest high (34.13) and the bottom trendline price (29.25), or 4.88. Subtract the result from the bottom trendline price, giving a target price of 24.37. The nearer target in the figure uses half the formation height, or 2.44, to give a price target of 26.81. An upward breakout target would be the height added to the top of the pattern, or 34.13 + 4.88 = 39.01.

Partial rise or decline. A partial rise or decline can be difficult to trade because price often pauses partway across the chart pattern on its way to the opposite side. This pause looks like a partial rise or decline. Wait before buying to be sure that price is unlikely to continue in the original direction. Try buying when price closes beyond the halfway point between the minor low/high and the trendline.

For example, if the top trendline is at 20 and price has declined from there to 14 before starting back up in what you suspect is a partial decline, buy when the price closes above 17 (that is half the distance between 20 and 14). You might use Fibonacci retracements of 38%, 50%, or 62% as buying locations, but I don't think they'll give you an edge. If price turns at those retracement levels, then consider opening a position.

Intraformation trade. If the pattern is tall enough, consider trading between the two trendlines. Buy after price bounces off the lower trendline and sell after it turns down at the top. If you are lucky, the pattern will break out upward and you can ride the stock even

higher. Use trailing stops to protect your profits. When the stock climbs above the nearest minor *high*, raise your stop to just below the prior minor *low*. That strategy should give the stock plenty of wiggle room, but adapt it to your market conditions.

Stop location. Table 9.7 gives guidance on how often price will reach various parts of the chart pattern on the way to the ultimate high or low. Be sure to adjust the stop location for your tolerance to losing your shirt (or blouse).

Busted trade. If you are lucky enough to trade a busted pattern that single busts, then that's terrific. You could make a nice chunk of cabbage. Since busts happen between 53% and 64% of the time, the odds are on your side.

If the stock double busts, then don't blame me. If the stock triple busts, then the whiplash from bouncing from side to side will make you too dizzy to blame anyone.

One advantage to trading a busted pattern is that you know where the pattern ends, and so you know what the breakout price is (with some broadening patterns, it can be difficult to tell where the pattern ends and the breakout price).

I suggest you trade only downward busted patterns. Buy when the stock closes above the top of the pattern and hang on for the ride.

Experience

Let me tell you about what I found in my trade review.

Hughes Supply Inc.

Hughes Supply Inc. (HUG) in the fall of 1999 started forming a broadening formation, right-angled and, yes, ascending. Although my notes go back to 1999, I don't have any for this trade. So let me wing it.

I bought 4 days after the stock touched the lower pattern trendline and received a fill at 13 even. When I bought, the stock hadn't risen much above the lower trendline (priced at 12.56), so I bought near the bottom of the pattern.

Unfortunately, the day I bought the stock peaked and reversed, completing a partial rise when the stock touched the lower trendline. The partial rise correctly predicted a downward breakout, and the stock continued lower. I sold my small position, received a fill at 12.34, and got my hand slapped for a loss of 5%.

I was late entering the trade, but I wanted to be sure price was moving higher, away from the bottom trendline when I bought. That sounds like an excuse, but knowing if price will turn at the trendline seemed like a wise choice. I only gave up 44 cents of profit by waiting.

I don't know if I had a stop in place to cash me out, and I'm unwilling to dig up my confirmation records to check. However, it's close enough to the 12.56 trendline that yes, I probably did use a stop to exit.

So the entry was late but justifiable, and the exit was perfect. I don't have a lesson to share. I traded this well and kept the loss small.

XL Group

In September 2009, XL Group (XL) started forming a right-angled and ascending broadening pattern. It was a long one, lasting until June 2010. The stock made a partial rise, but that failed to see price break out downward. That didn't bother me because I trade from the bullish side.

I hid in the bushes and waited for the upward breakout. The breakout happened on 15 September 2010, just over a year after the pattern began. I bought 5 days later and received a fill at the market open of 20.99. The breakout price was 20.28 (the opening price the day after the breakout), so I bought near the optimum entry price.

What was my stop price? None. Why? Because this was a long-term holding. I noted that the downside was 15.66, the bottom (start) of the broadening pattern. If the stock dropped that far, it would hand me a (potential) loss of 25% (however, the lowest the stock dropped was 17.69, about a year after I bought). The potential loss was well above the usual 8% or less I like to see, but this wasn't a trade, but an investment. I made allowances.

Upside targets were 28, 56, and 69. I also made mention in my trading notebook about this stock breaking out of congestion. It was a small knot, about a week long of sideways price movement. I seemed excited about that for some reason.

Indicators? Sure. Why not? Wilder RSI was overbought. Commodity channel index said sell 5 days ago (the day price broke out upward, which was a bad call). Bollinger bands were following volatility higher. It suggested waiting for a throwback that didn't happen (and a missing throwback suggests better performance, of course, from Table 9.4).

My computer informed me that volume was not rising consistently over the past 3 weeks, and warned of a higher failure rate for the trade because of it. *Hmm*. However, it patted me on the back about picking a stock with a rising relative strength against the S&P 500 index (that is, the stock was outperforming the general market).

Here's my notebook: “Buy reason: congestion breakout with high long-term potential. Risk 25% versus >100% reward. Could be exposed to hurricane losses if any storms brush [the] east coast. Its reinsurance business could get nailed, [caused by] hurricane losses. Placed a market order to buy at the open since the daily swing is all of 70 cents. Big deal. Bid/ask spread suggests an open higher by 3 cents, but we'll see. Futures at +6.50, so mildly higher open.”

Nothing really exciting there except for the potential to double my money. All I had to do was hold on long enough for that to happen.

Fast forward to 2018. Along the way, the stock dropped from peak to valley 30%, 25%, and 28%, in that order, but the stock always recovered. This was a buy-and-hold situation, and I was looking to make the big bucks, a doubling of my money.

On March 5, the company announced that it would be taken over by another company. The news upset me. Why? Because I felt they were buying the stock on the cheap. On the weekly chart, this was a cloudbank play, with the base of the cloud at 56 and the top of the cloud at 82. Their offer took me out of the stock at 57.60, below where the stock had once traded (at 82). Recall, my upward target was 69 and they were cashing me out just above my middle target, 56.

I made 198% on the trade, including dividends. I almost tripled my money, but it took 8 years to do it. In terms of dollar profit, this was my second most profitable trade (but well down the list in percentage terms), so I put a lot of cash behind it.

- Lesson: Good things can happen to people who wait.
- Lesson: For a buy-and-hold investment, you have to be able to tolerate large price swings.

Sample Trade

Palmer sat at his computer desk. His foot hammered the carpet, and his fingers drummed the desk. It looked as if he swallowed too much caffeine. I am sure you have met the type.

Faced with the situation shown in **Figure 9.5**, he took swift, decisive, maybe even impulsive action. At point A, where the stock touched the top trendline, he quickly sold it short and received a fill at 33.38. He placed a stop at 34 in case the trade went against him. Then he waited.

It did not take long for the stock to cross the broadening top and reach the horizontal trendline.

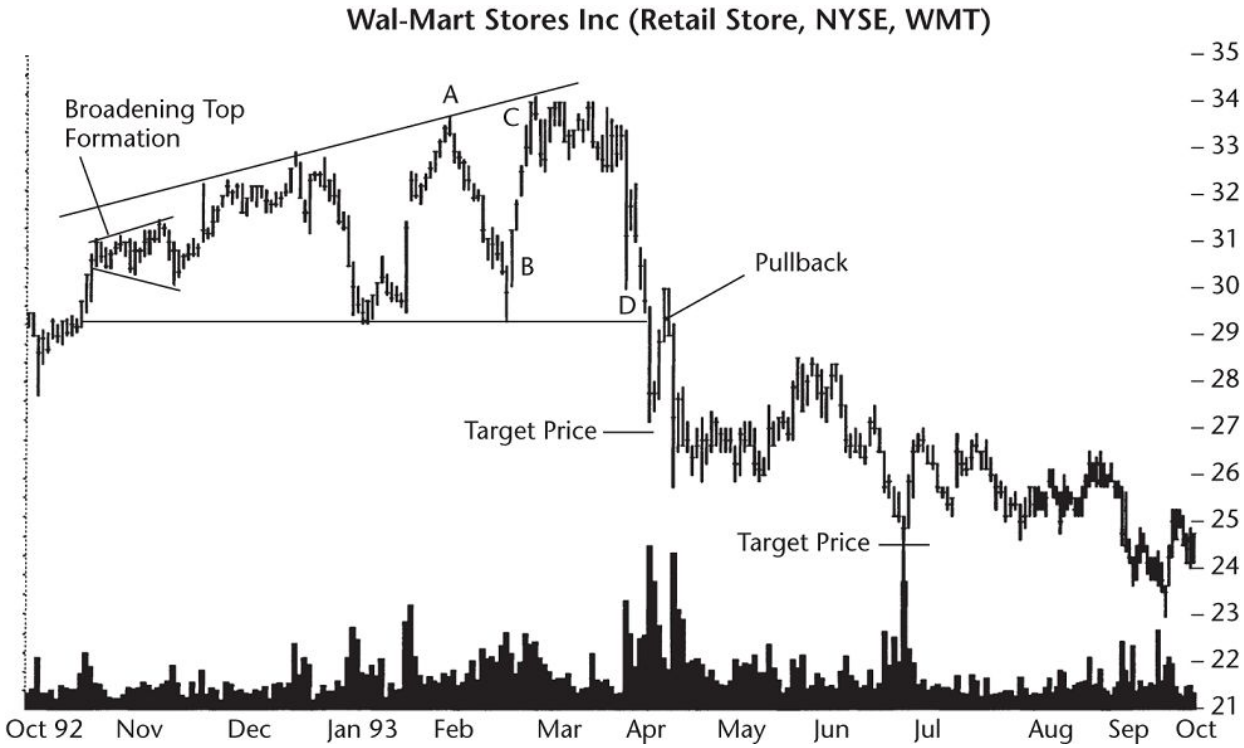


Figure 9.5 Shown are price targets using half and full formation heights for the broadening top formation.

His fingers stopped moving, and he pointed at the screen. “I should have placed an order to cover my short at 29.38. That's the value of the bottom trendline. Look what happened.”

Price bounced off the low. He covered his short the following day, shown as point B, at 30.50. Immediately, he went long and bought

the stock at the same price.

Palmer placed a stop-loss order just below the horizontal trendline, at 29.25, just in case. Then he extended the top trendline. “I worried that the stock might not reach it, so I put a target below the old high at A.”

In less than a week, the stock reached his target and sold at 33.50 (point C). Since the stock was still showing an upward bias, he held off trading and waited for the trend to reverse. Three days later he sold the stock short again at 33. This time, he put a sell order above the lower trendline at 29.50.

“The stock moved against me. Made me nervous.”

I wondered what that would look like. He was already twitchy. He couldn't sit still.

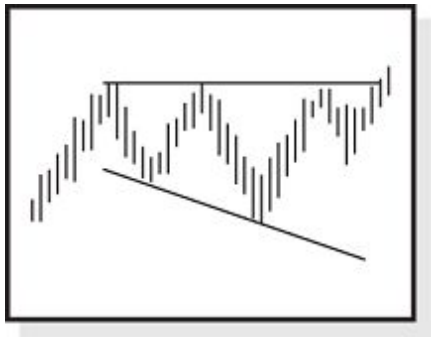
The stock rose to 34 and oscillated up and down for nearly 3 weeks, never quite reaching his stop-loss point of 34.38. Then the stock plunged and zipped across the chart pattern. It hit his target price at point D, and he covered his short.

Sensing a shift in the investment winds, he went long on the stock at the same price but put a stop-loss order below the lower trendline. “The following day, I was stopped out at 29.25 and took a small loss.”

“Then what did you do?” I asked.

He reached for his coffee mug, found it empty, and left the office for a refill. I never did get an answer to my question.

10
Broadening Formation, Right-Angled and Descending



RESULTS SNAPSHOT

Appearance: The pattern has a horizontal top with lower lows following a down-sloping trendline.

Upward Breakouts

Reversal or continuation	Long-term bullish continuation
Performance rank	19 out of 39
Breakeven failure rate	21%
Average rise	43%
Volume trend	Upward
Throwbacks	64%
Percentage meeting price target	65%

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	18 out of 36
Breakeven failure rate	23%
Average drop	15%
Volume trend	Upward
Pullbacks	69%
Percentage meeting price target	51%

The right-angled and descending broadening formation's name is a mouthful, but it describes a pattern with a flat top and price following a down-sloping trend along the bottom.

The performance rank places it in the middle of the chart patterns I studied. The pattern favors an upward breakout almost twice as often as a downward one.

The above Results Snapshot shows performance about what you would expect from a mid-list performer. Nothing appears that would blow the roof off the house. Volume trends upward throughout the pattern and that is unusual.

Let's take a scenic tour of the pattern.

Tour

What do descending broadening patterns look like, and why do they form? **Figure 10.1** shows an example of the chart pattern I caught back in the 1990s. There are the two key ingredients to this broadening pattern. First, price at the top of the pattern reaches the same level (or nearly the same) for several weeks. A trendline drawn atop the pattern's peaks forms a horizontal line.

Second, the minor lows touch and follow a down-sloping trendline as price drops. Eventually, price breaks out of the pattern by closing either above the top trendline or below the bottom one.

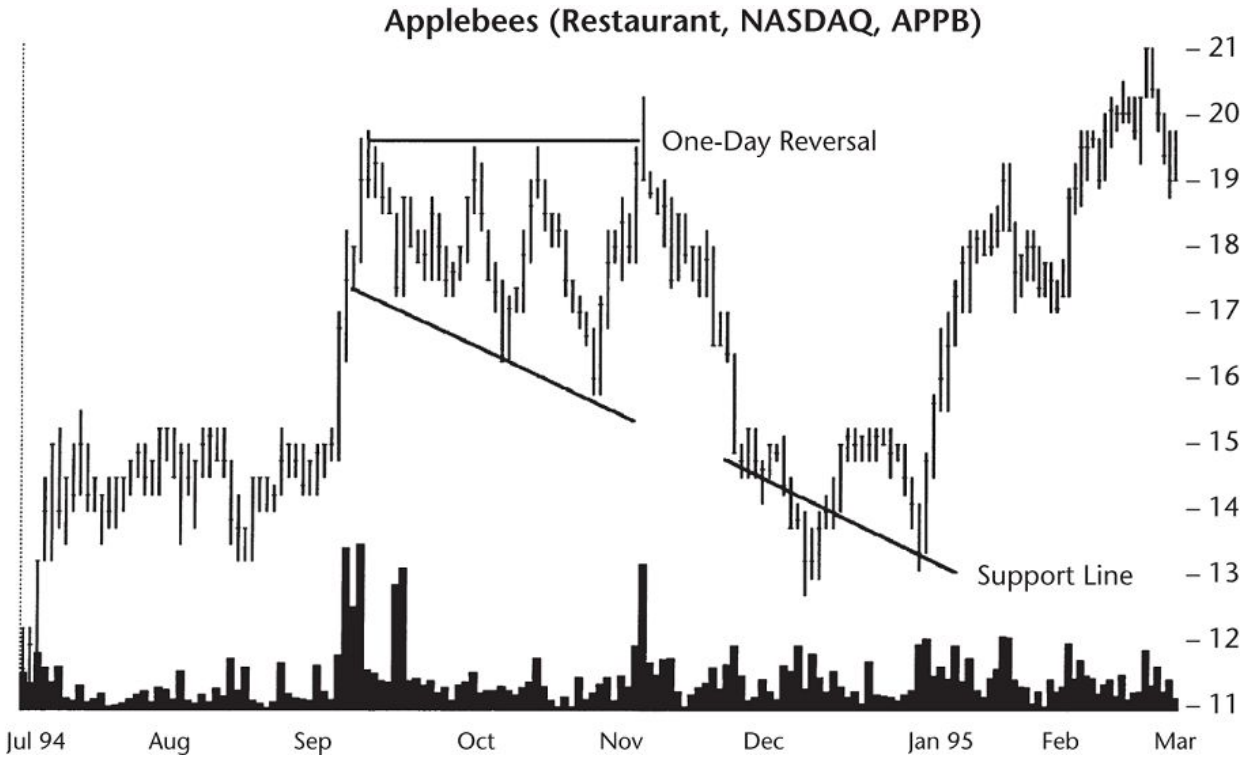


Figure 10.1 A horizontal trendline drawn along the tops, and a down-sloping trendline connecting the minor lows, is characteristic of this chart pattern. The extended, down-sloping trendline shows future support and resistance areas. A one-day reversal appears on 3 November when price pushed above the formation top on high volume but closed at the low for the day.

In this example, the breakout is downward (which happens in mid-November, the day when the second down-sloping line begins) because price closes below the lower trendline there. I require price to

close outside the trendline, so that's why the one-day reversal on 3 November at the pattern's top doesn't qualify as an upward breakout. On that day, price closed at 19, the low for the day, and below the top trendline value of about 19.50.

Figure 10.2 shows an example of the broadening pattern with an upward breakout. The top of the pattern is well formed with several minor peaks reaching the same price level. However, two one-day touches compose the lower trendline. A trendline touch is a trendline touch regardless of whether it is composed of one-day spikes or many days of consecutive touches, but they need to be minor lows (or minor highs), which these two are. If price cuts through a trendline, such as at the start or end of the pattern, it doesn't count as a trendline touch because it's not at a minor high or low.

The figure shows a broadening pattern with an upward breakout providing a tasty 10% rise in just over 2 weeks. A throwback to the top of the broadening pattern occurs almost 4 weeks after the breakout. I consider throwbacks or pullbacks that happen later than 30 days to be just normal price action, and not a throwback or pullback. This one just makes the cut at 27 days. Often, a throwback or pullback will return to the breakout price in an average of 12 days.

Why do these chart patterns form? Look at **Figure 10.3**. During 1993, the stock entered the left pattern in early April and moved higher on moderate volume until it reached about 35. There, investors selling the stock matched buyers eager to own the security, and the rise stalled. The stock traveled sideways until 10 May when it moved below the prior minor low. As the stock approached $31, it entered a support zone set up by the retracement in mid-March. The decline stalled and moved sideways for several days. Due to the support level, many investors believed that the decline was at an end and the stock would move higher. It did. As volume climbed, price gapped up (breakaway gap) and quickly soared back to the old high.

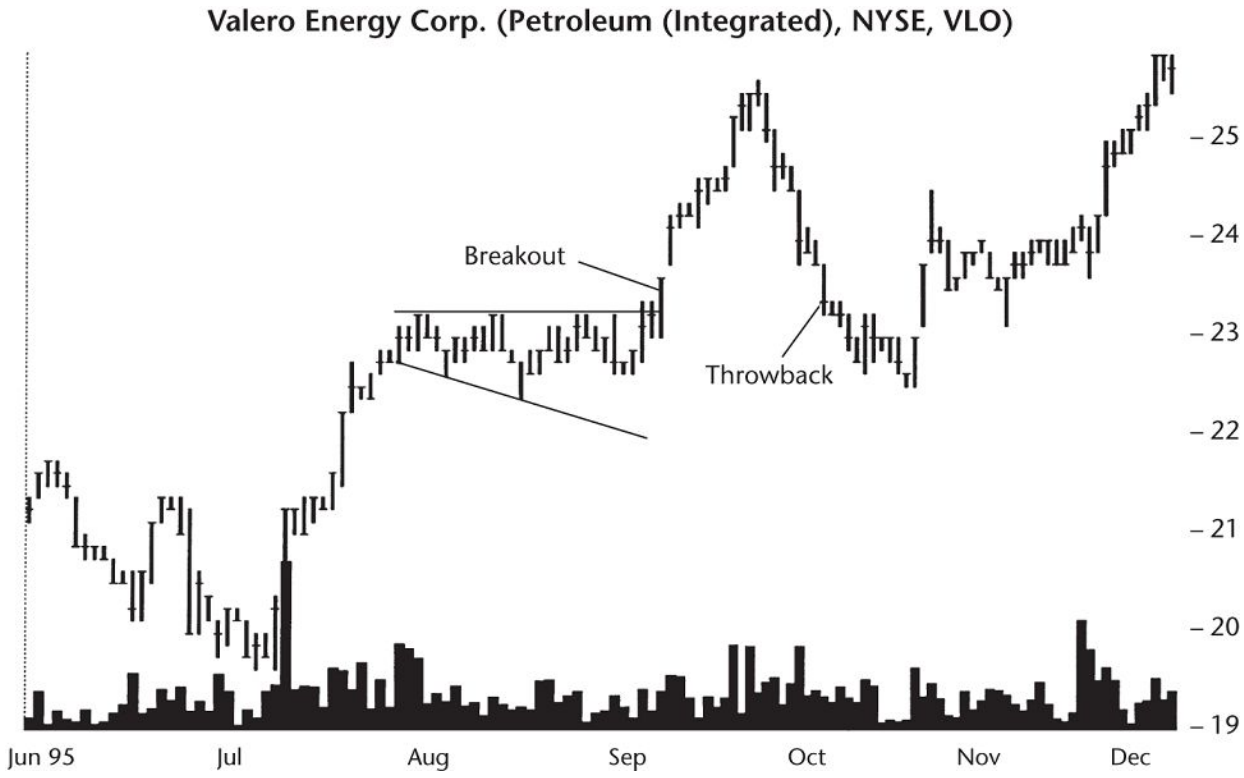


Figure 10.2 Another descending broadening formation, but this one has an upward breakout. Almost 4 weeks after the breakout, price throws back to the formation before ultimately moving higher.

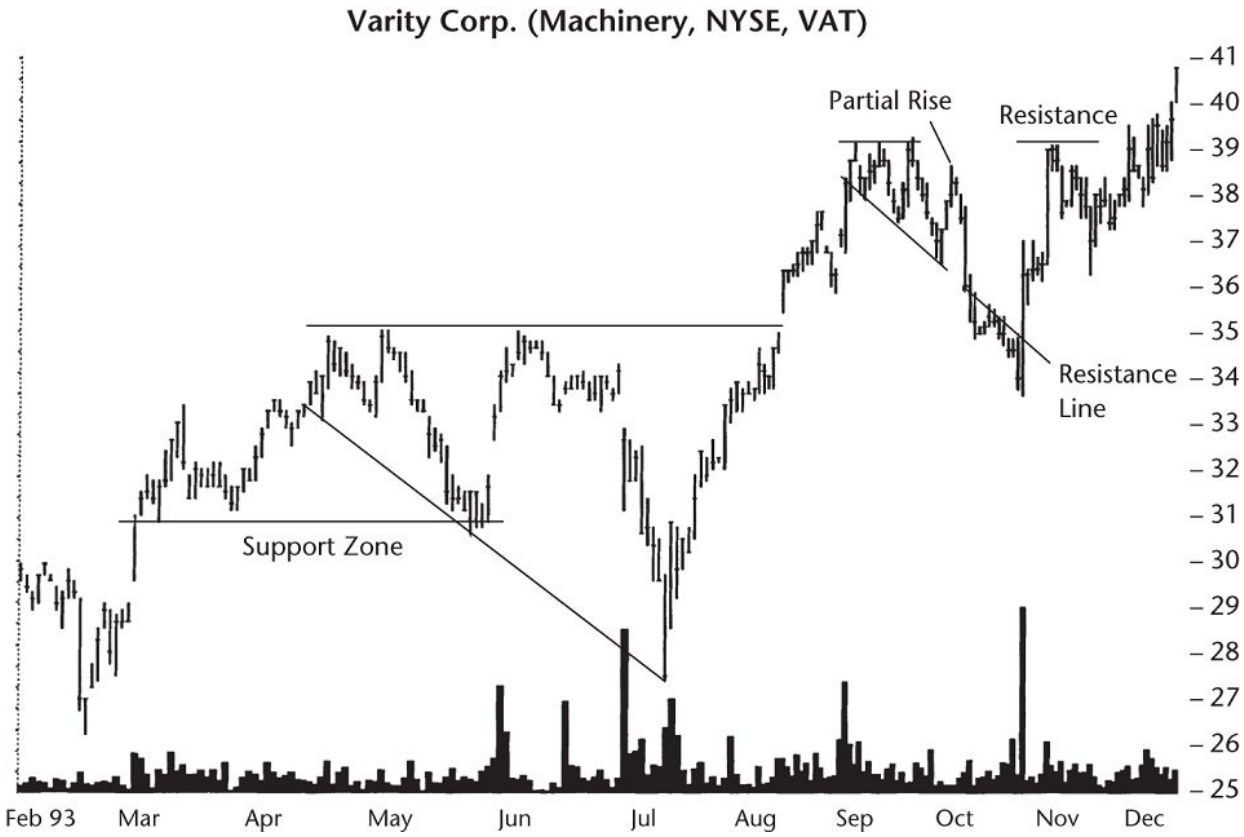


Figure 10.3 The left descending broadening pattern shows a trendline rebound resulting from earlier support. The right formation shows a partial rise that can predict a downward breakout. Shown are two resistance areas that follow the pattern's trendlines.

The stock ran into selling pressure from institutions and others trying to sell blocks of shares at a fixed price. The available supply of shares halted the advance. Price hung on for a few days, moved a bit lower, and paused before beginning a rapid decline to a new minor low.

As volume climbed, the stock declined until it touched the lower trendline, a region of support. Suspecting an oversold stock, investors bought and forced it higher again. When the stock reached the old high, there were fewer shares available for purchase. Investors and institutions who were trying to get 35 a share for their stock sold most of their shares in the preceding months. Soaking up the available supply, the stock gapped upward and closed above the old high. An upward breakout was at hand.

The stock moved higher but soon formed another descending broadening pattern (the right one, in August). This one was compact

and tight but had bearish implications.

When the stock tried to reach the top trendline but could not, the partial rise foretold the coming decline. The stock plunged through the lower trending in late September and continued lower.

If you look at both chart patterns, their stories are nearly the same. There is a supply of stock available at a fixed price. After exhausting the supply, price either rises above the top trendline or declines below the bottom one. The determination on which way price will go is not clear. Sometimes supply overwhelms buying demand and the stock declines, unable to recover as the stock pierces the lower trendline. At other times, the supply tightens and enthusiastic buyers jump in and push the price higher.

Identification Guidelines

Are there some guidelines that can assist in identifying descending broadening formations? Yes, and **Table 10.1** outlines them.

Appearance. The shape of the broadening chart pattern looks like a megaphone with the top held horizontal. Price climbs until it touches the top trendline, and then reverses direction. On the pattern's bottom, price declines, making a series of lower lows, following a trendline downward.

Table 10.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a megaphone, tilted down, with the top of the chart pattern horizontal and bounded on the bottom by a down-sloping trendline.
Horizontal top resistance line	A horizontal line of resistance joins the minor highs, shown by drawing a trendline connecting the peaks.
Down-sloping trendline	The expanding price series is bounded on the bottom by a down-sloping trendline.
Touches	Look for at least five trendline touches, three on one trendline and two on the other. They need not be alternating touches. Price slicing through a trendline doesn't count as a touch.
Whitespace	Price should bounce from trendline to trendline, erasing most whitespace in the pattern.
Breakout direction	Price can break out in either direction, usually accompanied by a rise in volume that soon tapers off.
Partial rise or decline	For an established pattern, when price climbs toward the top trendline or declines toward the lower one but fails to touch it, price often reverses direction and breaks out of the broadening pattern.
Volume	Trends upward most often (but almost random). Don't discard a pattern with a downward volume trend.
Support and resistance	Follows the two trendlines into the future but is sporadic.

Horizontal top resistance line. When two (preferably more) minor highs achieve the same, or nearly the same price, you can draw a horizontal trendline connecting them, forming the top of the pattern.

Down-sloping trendline. The same applies to the down-sloping trendline: It requires at least two distinct touches before drawing the

trendline (more touches are better).

Touches. I prefer to see at least five trendline touches, three on one trendline and two on the other, with all five being minor highs or minor lows (peaks or valleys). Fewer than five touches make correct identification more difficult.

Whitespace. **Figure 10.4** shows an identification problem at AB. There are two trendline touches along the top (as minor highs) and four touches as minor lows along the bottom. The pattern *looks* like a descending broadening pattern.

It's not.

See that chunk of whitespace at B? Price doesn't cross the pattern often enough to qualify it as a valid broadening pattern. The inset at C shows that the pattern is better drawn as a down-sloping channel. This chart is an example of cutting off a turn and calling it a descending broadening pattern. Do not tell anyone that you found a broadening pattern after you cut off a turn. What you found was a mistake.

Breakout direction. A breakout occurs when price closes outside the trendline boundary. Breakouts can occur in either direction.

Partial rise or decline. A partial rise, as shown in Figure 10.3, or a partial decline (not shown), is often a clue to the ultimate breakout direction. When price curls around on a partial rise or decline and returns to the trendline, the stock will usually break out immediately (that is, without crossing the chart pattern again).

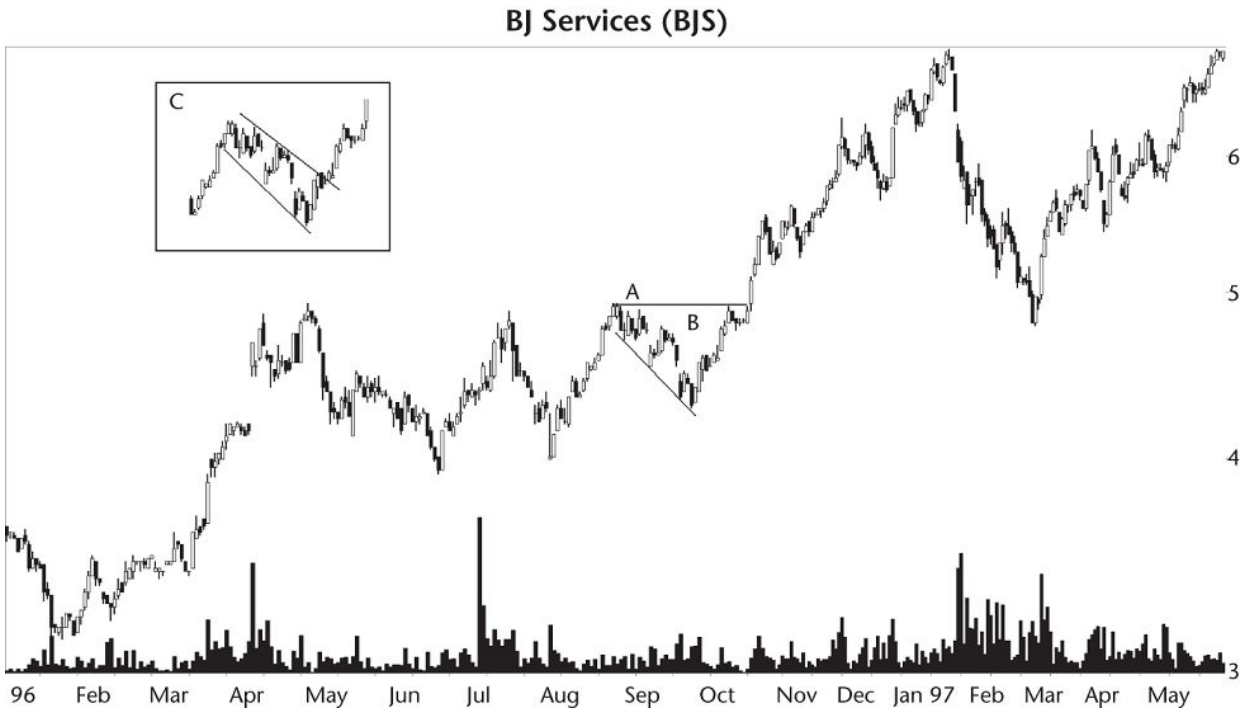


Figure 10.4 AB is not a descending broadening formation.

Volume. Volume tends to rise over the length of the chart pattern, sometimes following the price movement.

Support and resistance. The pattern's trendlines, when extended into the future, can sometimes act as areas of support or resistance. Figures 10.1, 10.3, and 10.7 show examples. Sometimes the support or resistance level is active for months or even years.

Focus on Failures

Since descending broadening formations can break out either up or down, I show both views of failed breakouts. The first one, **Figure 10.5**, is characterized by the telltale partial decline in late November. From there, the stock climbs and eventually pierces the top trendline, as predicted.

Once price closes above the trendline, you would expect it to throw back to the formation top and resume the upward trend. In this situation, price reverses at 45 and returns to the formation proper—a classic throwback. Unfortunately, instead of rebounding and heading higher like a typical throwback, the stock continues down. It does more work inside the chart pattern before shooting out the other side in a straight-line run.

Had you bought this stock after the upward breakout, you would have seen the stock decline from a purchase point of about 44.50 to a low of 36.88. A stop-loss order placed at the bottom of the chart pattern would have gotten you out at 39, still a hefty decline. However, if you'd held onto the stock (not recommended, by the way), it would have been rewarding. The low occurred on 8 April (not shown), and it turned out to be the lowest price reached during the next 2 years. The stock hit its peak in early November 1993 at a price near 60.

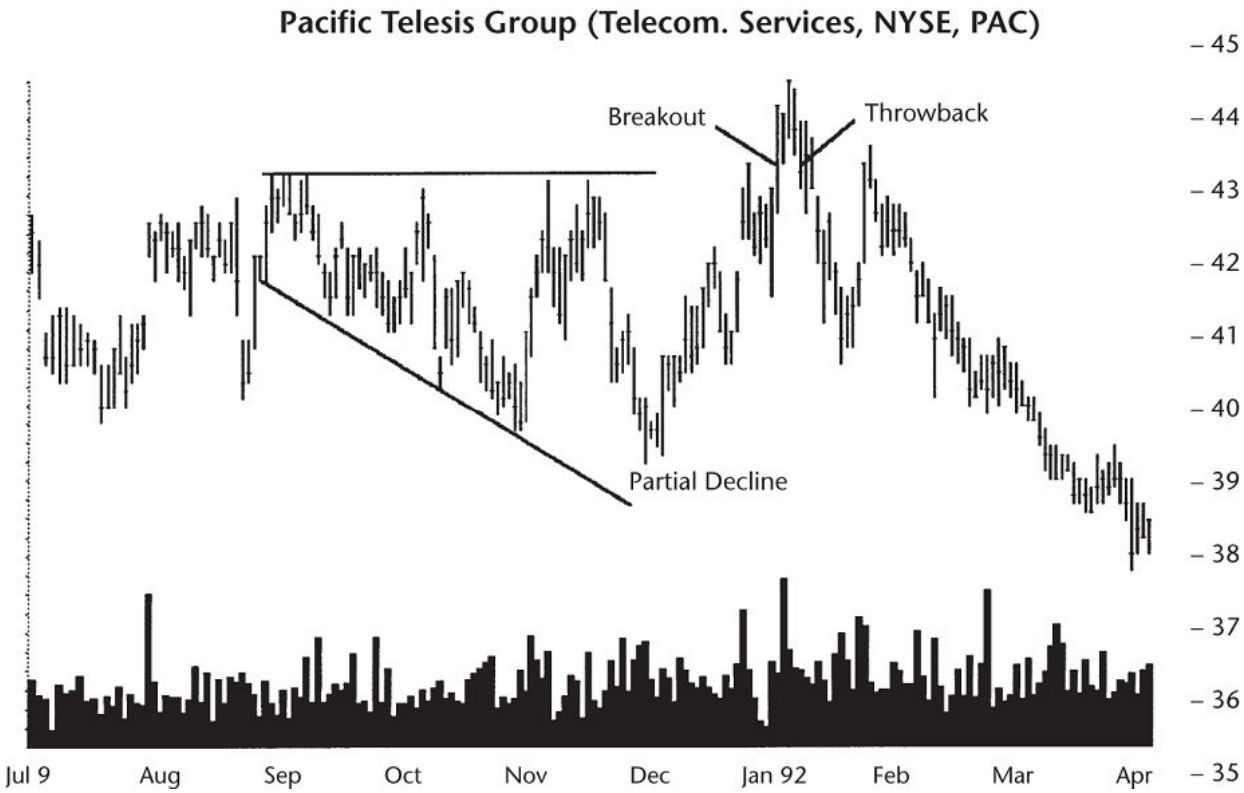


Figure 10.5 A descending broadening formation appears with price that fails to continue moving up. The partial decline suggests the ultimate breakout will be upward, but the rise falters and price moves down instead.

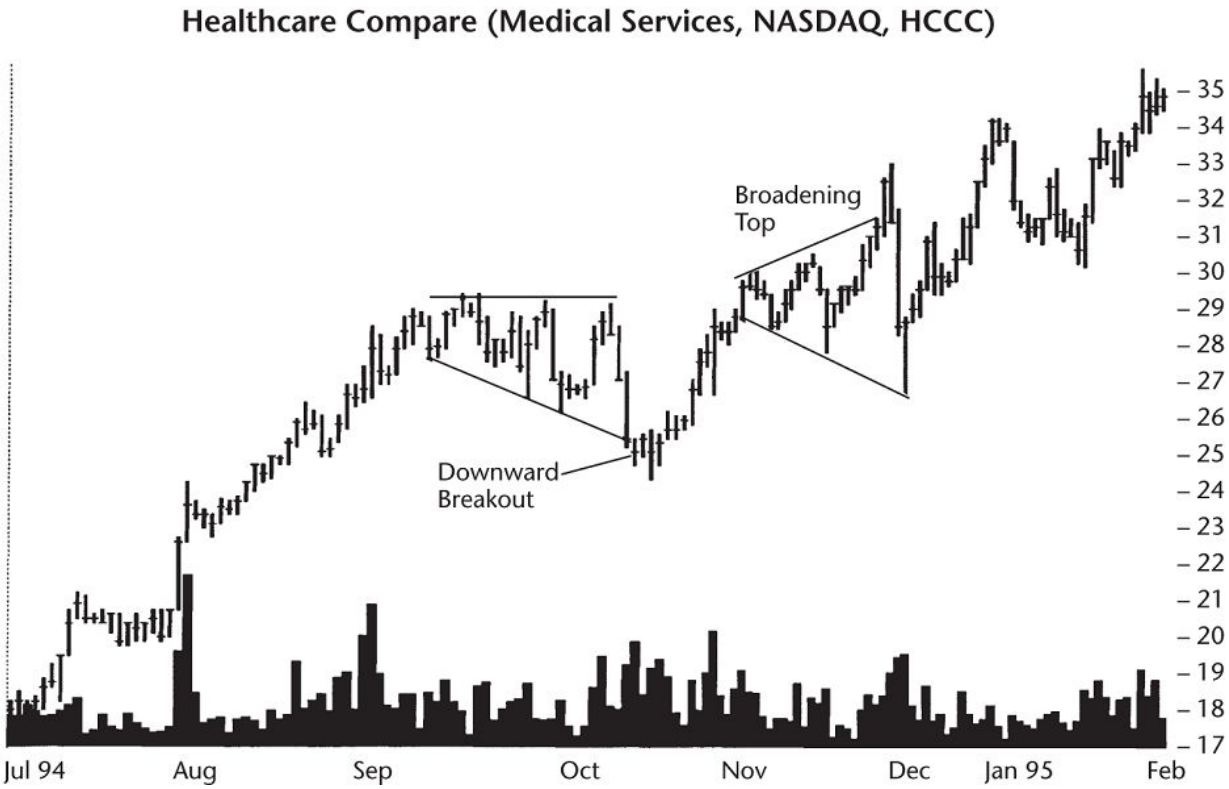


Figure 10.6 This descending broadening pattern (left) results in a 5% failure. A broadening top formed in early November.

Figure 10.6 shows a more harrowing tale because it involves a short sale. Investors watching the sharp 2-day decline beginning 14 October 1994 would be tempted to short the stock the next day. Had they done so, or even waited a few days, they would have opened the trade near the low. From that point on the stock moved higher, back into the formation before ultimately soaring out the top. If you were a novice trader and had not placed a stop on your short sale, your loss would have taken you from a low of 24.38 to 53, where it peaked near the end of the study.

The figure represents a failure type I call a *5% failure*. That happens when price breaks out in a given direction and moves no more than 5% before crossing the pattern and breaking out in the new direction. This type of failure can turn a small profit into a large loss if stops are not used.

Statistics

Table 10.2 shows general statistics for right-angled and descending broadening formations.

Number found. I found 1,150 patterns in 668 stocks from August 1991 to October 2019. However, that included bear market patterns, and there were not enough of those to include in the statistics. Not all of the stocks covered the entire period, and some no longer trade. Notice that the pattern favors upward breakouts, judging only by the numbers.

Table 10.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	601	335
Reversal (R), continuation (C) occurrence	38% R, 62% C	58% R, 42% C
Reversal, continuation performance	45% R, 41% C	–14% R, –17% C
Average rise or decline	43%	–15%
Standard & Poor's 500 change	12%	–2%
Days to ultimate high or low	244	51
How many change trend?	54%	27%

Reversal (R), continuation (C) occurrence. Upward breakouts act as continuation patterns most often, but downward breakouts act as reversals. Recall that a reversal has price leaving the chart pattern in a direction opposite the way it entered. Continuation patterns have price exit in the same direction as the prevailing price trend.

Reversal/continuation performance. Upward breakouts show better performance from reversal patterns, but downward breakouts favor continuations.

Average rise or decline. Shown in the table is the average rise or decline. Nothing spectacular here.

Standard & Poor's 500 change. I compared the date of the breakout to the ultimate high or low posted by the chart pattern and compared those to the index. The index shows it didn't perform nearly as well as the broadening pattern over the same holding period.

Days to ultimate high or low. Upward breakouts take an average of about 8 months to reach the ultimate high, but downward breakouts end faster, in about 2 months. The yardage traveled is different, though, because upward breakouts rise 43% and downward breakouts drop 15%. If you do the math, we find that the downward breakout should have reached bottom in 85 days, not 51. So, price dropped faster than it climbed.

How many change trend? I added this measure to help decide which chart patterns lead to outsized gains (a gain or loss of more than 20%). The results shown in the table are mid-list numbers. The upward breakout number is good (more than half the patterns see decent gains), but downward breakouts fall well short of a 20% loss (just 27% drop that far).

Table 10.3 shows various failure rates for the two breakout directions. How do you make sense of the table? It is easier to understand by example. I found that 21% of the patterns with upward breakouts failed to see price rise more than 5%. Over half (51%) of the patterns failed to see price rise more than 25% after an upward breakout.

Table 10.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	125 or 21%	77 or 23%
10	65 or 32%	72 or 33%
15	46 or 39%	50 or 59%
20	43 or 46%	45 or 73%
25	29 or 51%	29 or 81%
30	44 or 59%	21 or 88%
35	28 or 63%	15 or 92%
50	65 or 74%	17 or 97%
75	55 or 83%	9 or 100%
Over 75	101 or 100%	0 or 100%

Table 10.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	64% up	36% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 46%, M 49%, H 41%	L –19%, M –14%, H –12%
Throwbacks/pullbacks occurrence	64%	69%
Average time to throwback/pullback peaks	5% in 6 days	–7% in 6 days
Average time to throwback/pullback ends	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	43%	–15%
Average rise/decline for patterns without throwbacks/pullbacks	42%	–15%
Percentage price resumes trend	71%	55%
Performance with breakout day gap	35%	–18%
Performance without breakout day gap	44%	–15%
Average gap size	$0.45	$0.37

You read downward breakouts in a similar manner. Almost a quarter of the patterns (23%) saw price drop no more than 5%. Half (59%) didn't see price drop more than 15%.

Table 10.4 shows breakout-related statistics.

Breakout direction. Price breaks out of the pattern upward almost twice as often as downward.

Yearly position, performance. I sorted the breakout price into one of three buckets, each a third of the yearly high–low range. Then I checked performance for patterns in those three buckets. The table shows that there's not a big performance difference for upward breakouts. Clearly, though, you'll want to avoid trading patterns within a third of the yearly high (price rises 41%).

Downward breakouts also show those near the yearly high underperforming those in the other two buckets. It suggests people should avoid momentum trading this chart pattern and focus on bottom fishing for candidates.

Throwbacks and pullbacks. Throwbacks and pullbacks occur almost two-thirds of the time, and it takes stocks less than 2 weeks to return to the breakout price.

I didn't see any significant performance difference for patterns with and without throwbacks or pullbacks. With other chart patterns, if a throwback or pullback occurs, performance suffers (on average).

Price resumes the upward move 71% of the time (which is quite good) and the downtrend 55% of the time (which needs improvement, but it's not bad).

Gaps. Most of the time (for other chart patterns), breakout day gaps help performance but we see that behavior in this pattern only after a downward breakout.

The rumors you've heard are true: **Table 10.5** shows size-related statistics.

Height. Tall patterns perform substantially better than short ones. How do you use this result? Compute the pattern's height from the price of the top trendline to the last touch of the lower trendline (the lowest low in the pattern). Divide the difference by the breakout price. If the result is above the median shown in the table, then you have a tall pattern; below the median means it is a short one. Invest only in tall patterns unless you feel confident of your assessment.

Table 10.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	46%	–18%
Short pattern performance	39%	–13%
Median height as a percentage of breakout price	9.7%	10.4%
Narrow pattern performance	41%	–15%
Wide pattern performance	45%	–16%
Median width	50 days	42 days
Short and narrow performance	40%	–13%
Short and wide performance	37%	–10%
Tall and wide performance	48%	–18%
Tall and narrow performance	43%	–18%

Width. Wide patterns outperform narrow ones but not by an amount worth telling Mom about. I used the median length to separate narrow patterns from wide ones.

Height and width combinations. The worst performance comes from patterns that are both short and wide. You will want to avoid those. The best performance happens for patterns both tall and wide. The performance differences are large enough that you should pay attention to them when contemplating a trade.

Table 10.6 shows volume-related statistics.

Volume trend. Volume trends upward most often, but the direction is near random.

Rising/Falling volume. Broadening patterns with rising volume trend show better performance after the breakout than when volume recedes (as measured from the start to the end of the pattern).

Breakout volume. Technical analysts seem to place a lot of emphasis on heavy breakout volume, but as the table shows, the results I found are not statistically significant (for heavy or light breakout volume versus performance).

Table 10.7 shows how often price reaches a stop location. I split the pattern in half (I sedated it ahead of time) and checked how often price returned to the various parts on the journey from the breakout to the ultimate high or low.

Table 10.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	58% up	53% up
Rising volume trend performance	45%	–16%
Falling volume trend performance	39%	–14%
Heavy breakout volume performance	43%	–15%
Light breakout volume performance	42%	–16%

Table 10.7 How Often Stops Hit

Description	Up Breakout	Down Breakout
Pattern top	78%	2%
Middle	26%	17%
Pattern bottom	5%	74%

For example, broadening patterns with upward breakouts saw price return to the top of the pattern 78% of the time. It suggests you don't want to place a stop-loss order there. If you stick the stop order at the bottom of the pattern, it'll avoid being hit 95% of the time, but the resulting loss may be higher than you can tolerate. So *do* check both the position of the stop and the size of the loss should the stop trigger. A volatility stop may be just what you're looking for. I've hidden some in the Glossary (see “Volatility stop”).

Table 10.8 shows the performance over three decades.

Performance over time. For upward breakouts, the 2000s posted stellar gains. Downward breakouts suffered during the same time (and that makes intuitive sense).

Failures over time. Failures (failure of price to rise or fall more than 5% after the breakout) after upward breakouts happened most often in the 2010s, and downward breakouts also show a lot of failures in that decade, but the 2000s edged them out. There were two bear markets during the 2000s, but I used a coffee filter to remove them from the statistics.

Table 10.9 shows statistics for busted patterns.

Table 10.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	35%	–16%
2000s	53%	–13%
2010s	35%	–17%
Performance (above), Failures (below)		
1990s	19%	17%
2000s	19%	27%
2010s	25%	25%

Table 10.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	175 or 29%	144 or 43%
Single bust count	85 or 49%	100 or 69%
Double bust count	54 or 31%	5 or 3%
Triple+ bust count	36 or 21%	39 or 27%
Performance for all busted patterns	–13%	43%
Single busted performance	–22%	60%
Non-busted performance	–15%	43%

Busted patterns count. I'm always surprised at how many patterns fail to move more than 10% away from the pattern, then reverse and shoot out the other side of the pattern. Here, we have over a quarter

(29%) to nearly half (43%) bust the up or down breakout, respectively.

Busted occurrence. I sorted the number of busts into one, two, or more than two busts (triple+). Single busts happen most often. Notice that triple+ busts place second after a downward breakout. I've seen this in other patterns, too.

Busted and non-busted performance. Look at the performance after a single busted downward breakout: Broadening patterns see price rise an average of 60%. When I read that, my jaw swung open, my dentures fell out, and I had to pick them up off the carpet. Single busts also outperformed after a busted upward breakout.

The 60% number is so startling that if you can find a busted downward breakout, then *do* consider trading the pattern.

Non-busted patterns seem to have the edge (and it's slight) on performance if you disregard the single busted patterns and downward breakouts.

Trading Tactics

Table 10.10 outlines trading tactics for descending broadening formations.

Measure rule. Figure 10.7 illustrates the use of the measure rule. Compute the broadening pattern's height by first taking the difference between the highest high (A, 49.50) and the lowest low (B, 43.50). Add the result (6) to the value of the horizontal trendline to get a target price of 55.50 (for an upward breakout). Price reaches this target during mid-March 1996 as the stock climbs on its way to 60.

If the stock breaks out downward, the measure rule computation is nearly the same. Subtract the pattern's height from the lowest low, giving a target price of 37.50. Be aware that upward breakouts in bull markets are more likely to reach their targets (65%) than other combinations.

The lower portion of the table shows how often price will reach the target based on various heights. For example, if you slice the height of the pattern in half and use that in the measure rule computation, you'll find price will reach the target 82% of the time if your pattern behaves like the average pattern.

Once you've computed a target, change the difference between the target and the current price into a percentage of the current price. Then use Table 10.3 to see how often the stock will fail to exceed the move.

Using our example, the target is 6 points away from the top of the pattern (49.50, which we assume is the current price), or 12% above A (or 100 × 6/49.50). Table 10.3 shows that 32% will fail to see price rise more than 10%, so the failure rate would be higher for a 12% target. That also means 68% of the trades will see price exceed a 10% rise. That sounds like a reasonable number.

Table 10.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by taking the difference between the horizontal top and the lowest low in the pattern. For upward breakouts, add the height to the value of the horizontal trendline. For downward breakouts, subtract the height from the lowest low in the pattern. The result is the target price. The bottom portion of this table shows how often the measure rule works.
Wait for breakout	It is unclear which way price will break out (upward breakouts happen most often), so it is best to wait for price to close outside the trendlines. Once they do, expect price to continue moving in the direction of the breakout.
Stop location	Once a breakout occurs, consider the opposite side of the formation as the stop-loss point. However, in many cases you will want something closer to your purchase price, so look for nearer support or resistance zones or use a volatility stop.
Intraformation trading	For aggressive and experienced traders, consider placing a trade as price reverses course at the pattern's lower trendline boundary. Go long at the bottom (which hopes for an upward breakout), but be sure to use stops.
Partial decline	Short a stock if you see a partial decline once price curls around and begins heading back up. A partial decline correctly predicts an upward breakout 75% of the time.
Busted trade	If you see a busted downward breakout, then consider buying the stock. See Table 10.9 for details.

Description	Up Breakout	Down Breakout

Description	Up Breakout	Down Breakout
Percentage reaching half height target	82%	76%
Percentage reaching full height target	65%	51%
Percentage reaching 2× height	49%	23%
Percentage reaching 3× height	38%	13%

Wait for breakout. Because the breakout direction isn't known until price closes outside one of the trendline boundaries, don't try to anticipate the breakout direction. Price may reverse at the trendline, handing you a loss.

Stops location. Let's say price breaks out upward. Compute the target price and make a profit-and-loss assessment of the potential trade. What is the likely downward move compared with the target price? Does the potential profit justify the risk of the trade? For Figure 10.7, there is support in the 46-to-47 area.

Looking for prior peaks and valleys helps determine support and resistance levels. In March 1995 (not shown in the figure), there was an area of congestion bounded by a symmetrical triangle with an apex at about 46. Additional resistance appeared in July and October, as shown. Together, the 46-to-47 area made a good location for a stop-loss order.

Let's say the stop price you select is at 45.75, just below the bottom of the support area. If the breakout price is 50.50 (which is the close the day after the upward breakout), that gives a potential loss of less than 10%. With a target price of 55.50, or 10% upside, the win/loss ratio is an unexciting one-to-one. In such a situation, you could either tighten your stop by moving it higher (and risk getting taken out by normal price action) or look elsewhere for a more profitable trade.

Remember there is no rule that says you have to place a trade. Let me also say that I'm not a fan of win/loss ratios. If you trade patterns well, the profit should come.

Intraformation trading. If the broadening pattern is tall enough, go long after price rebounds off the lower trendline and hope for an

immediate upward breakout. Only try this if you're an experienced swing trader and only after the pattern passes all of the identification guidelines.

Partial decline. A partial rise correctly predicts a downward breakout 47% of the time. However, a partial decline correctly predicts an upward breakout 75% of the time. So if you can tell when a partial decline is in place, meaning the broadening pattern is fully formed (see “Partial decline” in the Glossary for details), then consider buying the stock and hoping for an upward breakout. The partial decline might be a pause that happens as price moves to the lower trendline, so if price breaks out downward, then close out the position. Otherwise hold onto the trade and hope price starts to head back up.

Busted trade. With a 60% average rise after a single busted downward breakout, busted patterns might be the way to profit from this chart pattern. See Table 10.9 for details.

Experience

I have traded this chart pattern a number of times. Let me tell you about what I found in my trade review.

Cisco Systems

Let's start with three trades in Cisco Systems. All of them traded the same broadening pattern that formed in June to September 2000.

In the first trade, the stock looked to be doing a partial decline. The pattern had a flat top with three trendline touches and three touches of the lower trendline, too, just as you would expect. The pattern looked ripe to break out upward in the high-tech boom of the 2000 market (but the general market turned bearish in March, before I bought. I'm not sure I knew that at the time).

I bought the stock after it broke out of a small congestion area (it was a small downward trending pennant with an upward breakout buried within the broadening pattern). I expected the stock to break out upward from the broadening pattern. Instead, it touched the top trendline and headed lower. As a swing trade, it would have been good to sell then, but I didn't. I rode the stock lower and sold after a downward breakout.

The second trade was also within the same pattern, but I bought as price dropped before breaking out downward. This was a “hip shot,” a trade I just glance at and make, confident that it'll work. Each time I pen those words in my trading notebook, I know the trade is going to be a loser (that's what I learned over the years, perhaps well after this trade). Hip shots just don't work for me. Now, I take my time to analyze the situation before trading.

Anyway, I thought the stock was going to turn, but it didn't. It kept going down.

With the third trade, I bought at the lower trendline, expecting an upward bounce. Instead, it closed the day outside the pattern's boundary, breaking out downward from the pattern. The next day, I closed out all three trades and took a loss of 15%, 8%, and 4% on them, respectively.

My notebook tells what I learned.

- Lesson: If an upside breakout from partial decline does not appear immediately, sell.
- Lesson: Do not buy more of a stock as it moves downward across the broadening pattern. Wait for it to bounce off the bottom trendline. Otherwise, the breakout could be downward, resulting in multiple losing trades.
- Lesson: Close out the trade when the market tells you you're wrong.

National Fuel Gas

National Fuel Gas (NFG) in late 2004 formed a broadening pattern. This pattern broke out upward, and I bought the next day, the same day the stock closed back inside the pattern (I didn't know it at the time).

From my notebook: “9 March 2005. Buy reason: Busted triple top, upward breakout from RABFD [right-angled broadening formation, descending]. The other natural gas companies have stocks that are moving up almost vertically. This one is pausing from recent gains in the rounding turn. Earnings are weak, but the market doesn't seem to mind. I expect the stock to move up as it follows the other natural gas companies higher. Earnings come out in April, and I expect them to be good, sending the stock higher. I think the price is anticipating a strong showing. The stop is a close one just in case (7% away).”

On 18 April, I have this curious entry: “I removed the stop intraday as I was getting used to my broker. The stock dipped below the stop price, but I didn't have a stop in place, so I wasn't taken out. Stop remains at 27.43.” To me that sounds confusing, as if I removed the stop and put it back in, too afraid that price would take me out. It worked this time, but it's not a habit you want to form.

On 29 April, I was stopped out of the stock and took a 6% loss. The timing of the sale is odd, though. I sold when the stock was about midway down the height of the broadening pattern. My assessment of the trade says that I sold too early.

Indeed, the stock continued lower. Two days later, the stock busted the upward breakout when it closed below the bottom of the pattern. But that was as far as it dropped. The stock climbed from there,

busted the downward breakout, and soared like I thought it would originally. The stock peaked at 63.71 in May 2008, a massive 133% above my sale price. You probably heard me yelling at the time about missing another big gain.

I picked the right stock, at the right time, but watched from the sidelines as it became an eagle and soared. However, I think I traded this correctly. I bought the day after the breakout, so I got in quick at a good price and sold when it was clear the stock was dropping. Waiting for it to turn at the bottom of the pattern, in this case, was *not* a mistake because it *did* break out downward. The stock just decided to turn back up from then on.

- Lesson: If a stock doesn't perform as expected, get out.
- Lesson: Don't lower or remove a stop unless you have a good reason for doing so. Being afraid price might trigger the stop is exactly the wrong reason for removing it.

Southwest Airlines

Southwest Airlines (LUV) in mid-2004 showed a similar situation. I identified a broadening pattern in the spring and bought after the throwback completed. In other words, I was late buying into the stock. Had I placed a buy stop a penny above the top horizontal line, it would have filled at 15.31 the day before the actual breakout. Instead, I bought in at 15.81, but that isn't too far off the optimal entry price.

From my trading notebook: “Mood (Will trade work? Bought too soon?): Cautious. Other airlines are moving lower, so I don't really trust this one. Long term, I think the price is a good one. Short term, who knows?

“Buy reason: Throwback from RABFD completed and oil prices are trending down. Since most of the fuel is hedged, the price won't make much difference. If it can push through the HCR [horizontal consolidation region] (flag in Dec 2003), then this has a chance of moving up.”

The stock formed a second broadening pattern and that one broke out upward, too, making a sharp rise upward (5% rise) in one day. The

move looked like an earnings surprise where price shoots up and then retraces the move over the following week to 10 days. That's what happened here, except earnings came out a few weeks later.

My notes say I should have sold the day of the 5% spike and locked in a profit. Instead, I took a 3% loss when the stock returned to the price of the top of the broadening pattern, where I sold.

- Lesson: When the market gives you a gift (the 5% rise), find the reason for the move and consider selling.

I don't know if that's good advice or not. In earnings surprises, it can pay to hold on for months because the announcement generates excitement and that excitement pushes the stock up (after the retrace that is). In this case, I don't know what caused the 5% rise.

Con-way

Con-way Inc. (CNF, now CNW) formed a broadening pattern starting in November 2003 and lasting until April 2004. Here's my notebook entry: “21 April 2004. I bought at market, filled at 37.13, 11:06 am. This is an upside breakout from a right-angled broadening formation, descending. Measure rule says 41.14 is the target, call it 41. Downside is just below prior minor low, 34.33 for 8% loss. The truckers are doing well right now, despite wishy-washy market and high fuel costs. The company also announced earnings that apparently were better than expected.”

I bought the day after the upward breakout. Over the next two weeks, the stock threw back, but I survived by holding on. My fingers hurt.

The stock started climbing in a measured move up type pattern (rise, retrace, rise). I raised the stop not once, nor twice, but seven times along the way to the sale.

On 12 July, the stop-loss order took me out of the trade. From my notebook: “Mood (Sell too soon?): Good. The stop took me out and this morning [the stock] is trading even lower. Earnings are due in 5 days, so maybe the stock is signaling weak results. Time to move on as it pierced the trendline on the sell day.”

What trendline am I referring to? The only idea I have is to draw one connecting the throwback low along the bottoms as price climbed. The stock broke out of a 10-day congestion region and pierced the up-sloping trendline at the same time. That's when I sold.

I made 8% on the trade, but sold too soon. Yes, the stock moved sideways for almost 3 months but eventually made its way to 61.87 or 54% higher than where I sold.

For a swing trade (it wasn't supposed to be), this was a good execution. I bought the day after the breakout and sold before weakness took the stock lower and threw it sideways to down for months. For a longer term position trade (which was intended), I missed the big gain. Again.

- Lesson: When position trading, allow for more volatility to capture longer-term gains.

Sample Trade

Ralph is a pattern trader with a measure of experience milking chart patterns for all they are worth. When he noticed what he thought was either a descending broadening wedge or a right-angled descending broadening formation, he bought the stock. His order, placed at point C in **Figure 10.7** (46.38), was just after the stock bounced off the lower trendline.

He monitored the stock closely and watched it move up the very next day, then ease lower.

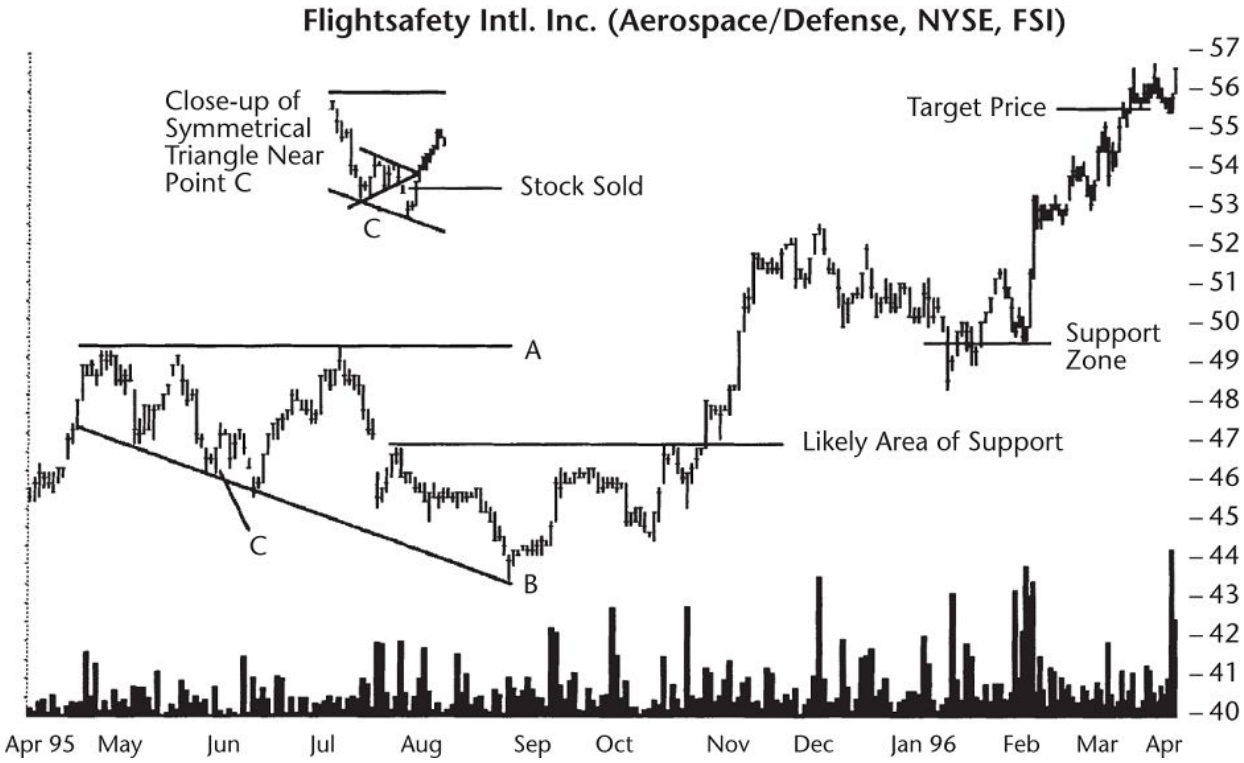


Figure 10.7 This descending broadening pattern has an upward breakout. To compute the measure rule for upward breakouts, find the difference between the high and low in the formation, denoted by points A and B. Add the height to point A to get the upward breakout target price. It took almost 7 months for price to exceed the target. A small symmetrical triangle appears at point C.

"After a few days, I saw the symmetrical triangle form and got worried. Those things are unpredictable." When the stock moved below the lower triangle trendline, Ralph sold the stock and closed out his trade at 46.50.

He cleared the image on the screen and looked at a chart without any lines or indicators. Just price.

Ralph smiled. “I made the right decision to sell because a partial rise,” such as where the triangle formed, “can predict an immediate downward breakout.”

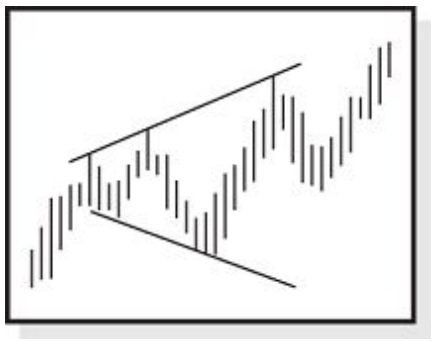
Sure enough, the following day price dropped even further, tagging the broadening formation trendline again.

“Then the blasted thing bounced on me. Caught me by surprise. I wasn't in the stock then, but I like to think I made the right decision to sell. The thing went all the way back up to A, right where I hoped it would go during my trade. But nooo!”

Ralph took a small loss after factoring in commissions.

“I sold at the right time. The stock broke out downward from the triangle and could have continued a lot lower. In hindsight, though, I could have waited to see if the stock found support at the lower trendline. It was close enough that I could have tolerated the potential loss. In this case, all I had to do was wait no more than 3 days before price started climbing to A.”

11
Broadening Tops



RESULTS SNAPSHOT

Appearance: Price trends upward leading to the chart patterns. The pattern has a megaphone appearance with higher highs and lower lows that widen over time.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Intermediate-term bullish continuation
Performance rank	22 out of 39	14 out of 20
Breakeven failure rate	18%	18%
Average rise	42%	25%
Volume trend	Upward	Upward
Throwbacks	67%	64%
Percentage meeting price target	66%	52%
Synonyms	Expanding triangle, broadening triangle, orthodox broadening top, and five-point reversal	
See also	Broadening bottom	

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	28 out of 36	14 out of 19
Breakeven failure rate	27%	9%
Average drop	13%	22%
Volume trend	Upward	Upward
Pullbacks	67%	67%
Percentage meeting price target	42%	46%

Broadening tops, not surprisingly, look a lot like broadening bottoms. What separates a top from a bottom is the price trend leading to the chart pattern. For tops, the inbound price trend is upward; for broadening bottoms, it is downward. This is an arbitrary distinction I made just to see if the two chart patterns act differently. In answer to the question you have probably posed right now: Yes, the two formations have slightly different performance (but both are yucky).

A brief review of the Results Snapshot shows the performance rank is midrange. The rank is based on how far price moves after the breakout compared to other chart pattern types.

The breakeven failure rate for downward breakouts in bear markets is terrific, just 9%, but that ranks the pattern at 11 out of 19 (not shown). As small as the failure rate seems compared to the others shown in the table, it's still a mid-list performer.

The average rise varies from 25% in bear markets, where the general market is trying to drown price, and 42% in bull markets, where the market trend tugs on the stock like a helium balloon. The average decline is 13% in bull markets, which compares to a 22% drop in bear markets. This time, bear markets are pulling price downward, hence the larger average drop than in bull markets.

Tour

Broadening patterns come in a variety of styles and names. There are the broadening tops and bottoms, right-angled ascending and descending, expanding triangle, orthodox broadening top, and five-point reversal. The last three—expanding triangle, orthodox broadening top, and five-point reversal—are synonyms for the broadening top, with the last two being based on five turning points.

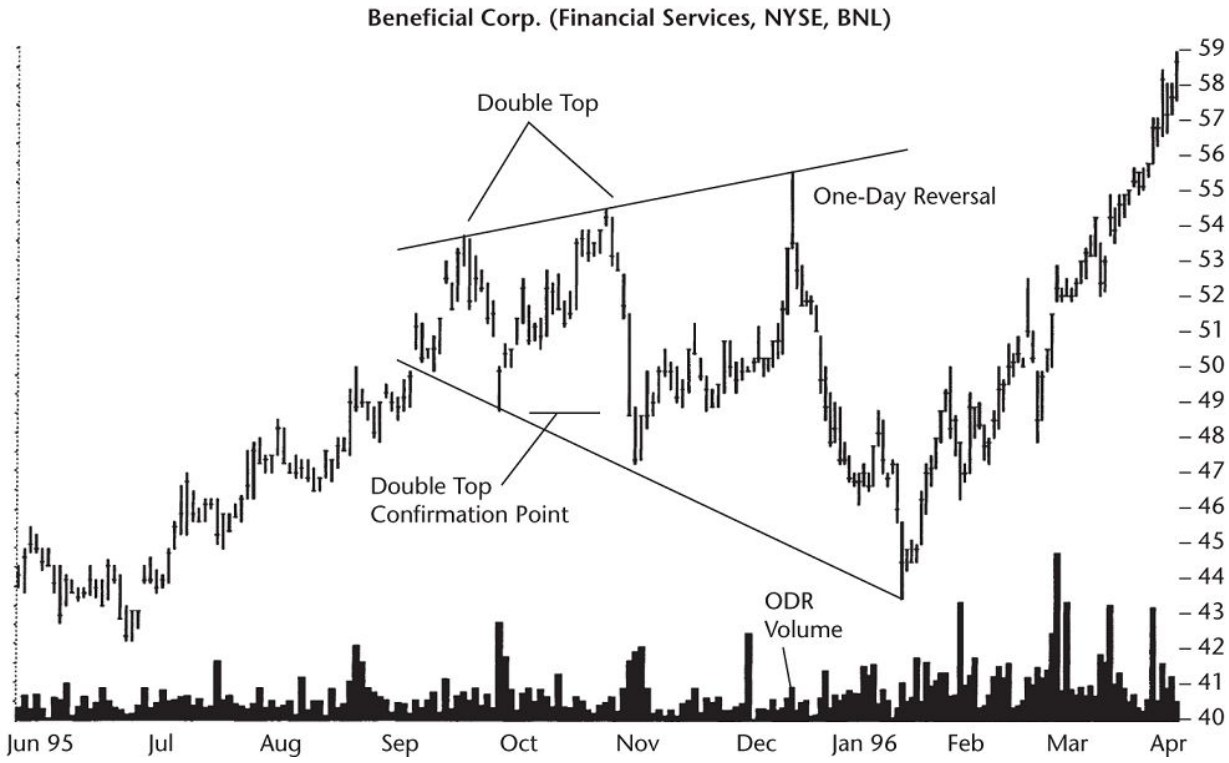


Figure 11.1 A potential triple top changed into a broadening formation. The one-day reversal appeared as the third peak after an unsustainably quick price rise. The broadening top formation marked a struggle between eager buyers and reluctant sellers at the lows and the quick-to-take-profit momentum players at the peaks.

For a tour of the chart pattern, look at **Figure 11.1**. The stock began an uphill run in December 1994 and continued climbing to reach a high in mid-September at 53.75. Holders of the stock, enjoying the long run, decided to sell their shares and retire in Florida. The stock headed lower. On 25 September 1995, volume spiked upward and halted the decline. Investors, seeing a 40% retrace of their gains from

the June peak, apparently thought the decline overdone and purchased the stock, sending price back up.

Price peaked at a higher level, 54.50, on 19 October. Astute traders, who suspected a double top was forming, promptly sold their holdings to maximize their gains, sending price tumbling. Price confirmed the double top when it fell below the confirmation price (below the lowest low between the two peaks), at 48.75.

Volume picked up, and the struggle between supply and demand reasserted itself. The decline stalled as traders willing to buy the stock overwhelmed reluctant sellers. The stock turned around and headed higher. By this time, chart followers could draw the two trendlines—one across the twin peaks and another below the two valleys—giving birth to the broadening top pattern. Traders jumped on the bandwagon at this point and purchased the stock. They wanted to play the anticipated rise as the formation broadened out. The stock cooperated and moved higher, reaching the top trendline once again at a new high of 55.50.

The steepness of the ascent in the latter stages was unsustainable. The peak looked like a one-day reversal, with a close near the low of the day and a tall daily price swing. However, volume was unconvincing. It was higher that day than during the prior week, but it certainly was not of the caliber of the late November spike.

In any case, the stock tumbled and soon reached a new low of 43.50, stopping right at the bottom trendline. Once the stock began moving higher, the momentum players jumped on board and volume increased along with price. Buying enthusiasm and rising momentum pushed the stock higher, climbing through the top trendline. An upward breakout occurred.

Throughout the various peaks and troughs as this chart pattern unfolded, there was a struggle between buyers and sellers. Near the lows, the buyers believed the stock was oversold, and they eagerly bought it. At the top, they and others sold their shares and pocketed handsome profits. This selling pressure, of course, sent the stock back down.

Some investors—seeing the stock decline below their purchase price and still believing that the stock had value—bought more. That

behavior also helped turn the stock around at the lows and probably explained their heightened nervousness at the top. They wanted to keep their gains this time instead of watching them evaporate should the stock decline again.

The broadening top shown in the figure also makes evident that identifying the ultimate breakout is difficult. It appears that each new high or new low may be the final push to freedom. Only when price moves in the opposite direction is it clear that price will not break out. We explore ways to profit from that behavior in the Trading Tactics section.

Identification Guidelines

Table 11.1 shows the identification guidelines for the broadening top.

Appearance. The pattern looks like a megaphone with price peaks and valleys bounded by two diverging trendlines. The top trendline slopes upward, and the bottom one slopes downward.

Price trend. The price trend leading to the start of the pattern is what differentiates a broadening top from a broadening bottom. For broadening tops, the price trend should be upward, leading to the chart pattern, not downward as in the broadening bottom. This is just an arbitrary designation I have chosen to distinguish tops from bottoms (in all chart pattern types).

Trendlines. Trendlines drawn across the peaks and valleys resemble a megaphone. Higher highs and lower lows make the formation obvious to those versed in spotting chart patterns. The slope of the trendlines is what distinguishes this chart pattern from others. The top trendline must slope up and the bottom one must slope down. When one of the two trendlines is horizontal or nearly so, the formation becomes a right-angled ascending or descending broadening formation. When the two trendlines slope in the same direction, the formation is a broadening wedge.

Table 11.1 Identification Guidelines

Characteristic	Discussion
Appearance	Megaphone shape with higher highs and lower lows. Five-point reversals have three peaks and two troughs.
Price trend	The price trend leading to the formation should be up. Ignore any overshoot or undershoot within 2 weeks of the pattern's start.
Trendlines	Price is bounded by two trendlines: The top one slopes upward, and the bottom one slopes downward.
Touches	Should have at least five touches, three on one trendline and two on the other, but not necessarily alternating touches. Price passing through a trendline doesn't count as a touch.
Volume	Trends upward most often. Do not discard a pattern because of an adverse volume trend.
Breakout direction	The breakout can occur in either direction and, in several cases, price moves horizontally for several months before staging a definitive breakout.

Touches. There should be at least five touches of the trendlines: two on one trendline and three on the other, but be flexible. Five (or more) minor high or minor low touches makes for a well-formed pattern. Fewer touches than five often leads to incorrectly identified patterns.

Avoid counting it as a touch when price slices through a trendline (no minor high or low involved). That's common at the start and end of the broadening pattern. Figure 11.3 shows an example of this on both ends of the bottom trendline. The trendline cuts through price and does not rest on a minor low, so it doesn't count as a touch.

Page back to Figure 11.1. It shows three minor highs touching the top trendline and four minor lows either nearing or touching the bottom trendline. The minor highs and minor lows need not alternate as price crisscrosses the broadening pattern (but usually do).

Volume. Linear regression on volume shows it trending up most often. Many times, the volume pattern mimics the price pattern: rising and falling along with price, but the overall trend will be upward. Many times, you can tell the volume trend by dividing the pattern in half and estimating which half has higher volume.

Breakout direction. A breakout happens when price *closes* outside one of the trendline boundaries or follows a trendline for an extended time. In the figure, if you extend the top trendline upward, it will intersect price at about 58. That's a long time to wait for a breakout.

When a breakout occurs, I consider the actual breakout price to be the value of the highest peak in the pattern. In the figure, for example, the breakout price is 55.50, or the high at the one-day reversal. Determining the breakout price is one of the challenges of trading a broadening top.

For an example of how to apply the various guidelines, consider the broadening top shown in **Figure 11.2**. At first glance, it looks like a large megaphone with price trends that generally follow two sloping trendlines. The top trendline slopes upward and the bottom one slopes downward, each intersecting the minor highs or lows at least twice, totaling at least five touches.

Price forms higher highs and lower lows until it breaks out of the chart pattern, closing beyond the line of trend or below turn 5.

The volume pattern generally rises as price moves up and recedes as price moves down. The figure shows this quite clearly. During the rise in mid-November, for example, volume jumped upward as price peaked, then just as quickly receded as price declined.

Figure 11.3 shows a U-shaped volume trend. Volume is higher in September and December, and lower in the intervening months.

Orthodox broadening tops and five-point reversals describe the same type of pattern. They are simply broadening tops that have three minor highs and two minor lows. Figure 11.3, for example, falls into this category. Other than the name, I found no substantial difference between broadening tops, orthodox broadening tops, and five-point reversals.

Some analysts say five-point reversals are bearish indicators, and that the formation predicts a downward breakout. A study of the pattern, admittedly using only 30 samples, suggests this is untrue. Sixteen break out upward and the others (14, but check my math) break out downward. However, the sample size is too small to make a definitive statement.

Figure 11.2 The broadening top has higher highs and lower lows as the price swings widen over time.

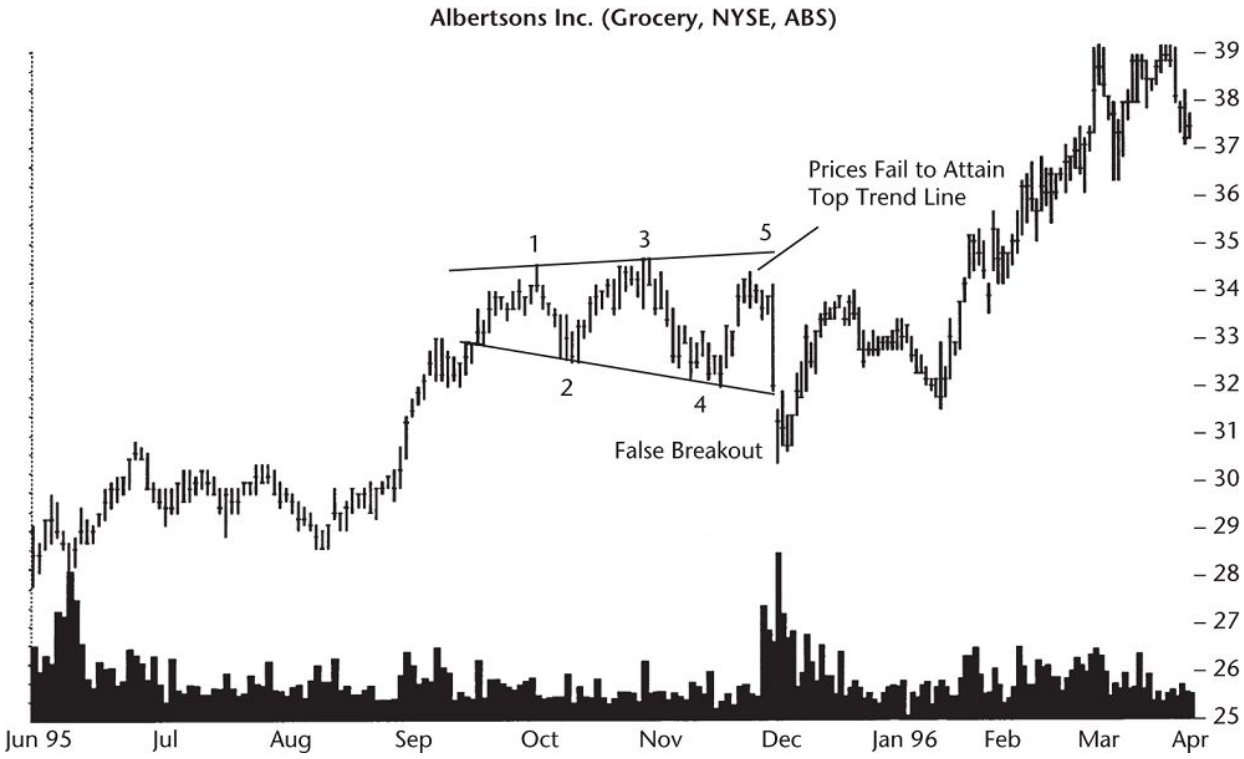


Figure 11.3 A weak example of a five-point reversal or orthodox broadening top. It has three minor highs and two minor lows composing the five turning points.

Focus on Failures

What does a broadening top failure look like? Figure 11.3 shows a sharp downward breakout day thrust that pierces the bottom trendline on high volume. Since this is clearly below the lower trendline, and coupled with the failure of price to attain the upper trendline (a partial rise), a downward breakout is at hand.

The downward plunge is like a mountain climber hitting a ledge. Price stalls on very high volume, recovers, and starts climbing again. This is an example of a 5% failure; that is, price breaks out and then moves no more than 5% in the direction of the breakout before moving substantially in the other direction.

Contrast the behavior shown in Figure 11.3 with that shown in **Figure 11.4**. I include this chart because I have noticed that a large number of broadening formations act this way. Instead of making a clear up or down thrust that pierces the trendline, price moves horizontally for months before finally closing above or below the formation highs or lows.

In this case, price declined below the low in early July and halted (the last trendline touch at pattern's end). Price climbed for a bit then receded again and reached a new low in early August. It looks as if price vaulted over the August volume spike.

Another recovery saw price rise no higher than 44 for about half a year before finally staging an upward breakout. The breakout happened when price closed above the top of the chart pattern. The sideways move isn't a 5% failure, but it tries the patience of traders waiting for something to happen.

Figure 11.4 Price in this broadening top moved horizontally for 6 months before staging an upward breakout. This horizontal movement is a common occurrence with broadening tops.

Table 11.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	1,215	200	804	205
Reversal (R), continuation (C) occurrence	100% C	100% C	100% R	100% R
Average rise or decline	42%	25%	–13%	–22%
Standard & Poor's 500 change	12%	–1%	–2%	–11%
Days to ultimate high or low	253	91	56	37
How many change trend?	52%	41%	23%	45%

Statistics

Table 11.2 shows general statistics for this chart pattern.

Number found. I uncovered 2,424 broadening tops in data from July 1991 to November 2019 in 873 stocks. Not all stocks covered the entire time, and some of them no longer trade.

Reversal (R), continuation (C) occurrence. By definition, since we are dealing with a top, an upward breakout is a continuation and a downward breakout means a reversal of the prevailing upward trend.

Average rise or decline. I compared the average rise or decline with the average for all chart pattern types and found that the broadening top underperforms in all market conditions (bull/bear) and breakout directions, despite what you see in the table.

Standard & Poor's 500 change. Notice how the general market helped or hindered price. The numbers, when compared to the average rise or decline, suggest trading with the market trend (bull market, upward breakouts and bear market, downward breakouts) for the best performance. This makes intuitive sense.

Days to ultimate high or low. The time it takes price to rise to the ultimate high or sink to the ultimate low varies from 253 days (about 8.5 months) to 37 (5 weeks).

I compared the average speed of price for upward versus downward breakouts in bull markets. The decline should have taken 79 days, but the average is 56 as shown in the table. Thus, price drops faster than it rises. In this case, it's not quite twice as fast (which is what I've seen in other chart pattern types).

Comparing the two bear market columns, we see price rise 25% in 91 days and drop 22% in 37 days. If price dropped as fast as it climbed, it should have taken 80 days to drop 22%. In this case, price drops more than twice as fast in bear markets as it rises.

How many change trend? This is a measure of how many broadening tops see price move more than 20% away from the breakout price. I like to see values above 50%, but only one of the columns qualifies.

Table 11.3 shows failure rates for broadening tops. I found that 18% of broadening tops in bull markets after upward breakouts fail to see price rise more than 5%. That's how you read the table.

Here's another example. Just over half (52%) of patterns in bull markets with downward breakouts fail to see price drop more than 10%. Notice how quickly failure rates increase.

Bear markets with downward breakouts have the lowest failure rate initially, 9%, but the edge over bull markets with up breakouts does not last long. For moves of 15% and higher, bull markets with upward breakouts maintain a lower failure rate.

How is this information useful? Imagine that the measure rule predicts price will climb from 40 to 50, a 10-point rise. That's a move of 25%. How many broadening tops in bull markets, on average, will see price rise more than 25%? Answer: 46%. To put it another way, 54% of them will fail to see price rise more than 25%.

Table 11.4 shows breakout-related statistics for broadening tops.

Breakout direction. In bull markets, price breaks out upward most often. In bear markets, the breakout direction is random.

Table 11.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	219 or 18%	35 or 18%	219 or 27%	19 or 9%
10	160 or 31%	31 or 33%	196 or 52%	30 or 24%
15	119 or 41%	24 or 45%	125 or 67%	39 or 43%
20	81 or 48%	28 or 59%	83 or 77%	25 or 55%
25	78 or 54%	22 or 70%	60 or 85%	27 or 68%
30	62 or 59%	10 or 75%	40 or 90%	16 or 76%
35	62 or 64%	9 or 80%	26 or 93%	13 or 82%
50	121 or 74%	19 or 89%	45 or 99%	28 or 96%
75	122 or 84%	10 or 94%	9 or 100%	5 or 99%
Over 75	191 or 100%	12 or 100%	1 or 100%	3 or 100%

Yearly position, performance. I sorted the breakout price into one of three bins. Upward breakouts show the best performance when the breakout price appears in the middle third of the yearly high–low price range. Downward breakouts favor the lowest third of the range.

Throwbacks and pullbacks. A throwback or pullback occurs about two-thirds of the time, and it takes 11 or 12 days to complete the trip back to the breakout price (on average).

In all cases, when a throwback or pullback occurs, performance suffers. To avoid a throwback or pullback, look for nearby support or resistance that is strong enough to turn price back. Good luck with that. I've not been able to predict whether a throwback or pullback will happen. I just assume they will and go from there. If they don't appear, I'm as happy as a kid with a bag full of candy on Halloween.

You might try looking for overhead resistance or underlying support within 5% to 11% away from the pattern (those percentages are averages of how far price travels in 6 days, according to the table).

Gaps. Sometimes a breakout day gap helps and sometimes not. Downward breakouts have results that are one percentage point apart, so they may not be statistically significant. Upward breakouts see better performance if a gap is absent. That's counter to normal trading wisdom. Other chart patterns see performance improve if a gap occurs.

If you want to participate in a gap trade, know that I measured performance using the opening price the day *after* the gap, so you can buy a stock after it shows a gap and maybe you can participate in the better performance.

Table 11.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	60% up	49% up	40% down	51% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 34%, M 46%, H 41%	L 23%, M 26%, H 25%	L –16%, M –14%, H –12%	L –23%, M –22%, H –17%
Throwbacks/pullbacks occurrence	67%	64%	67%	67%
Average time to throwback/pullback peaks	5% in 7 days	7% in 6 days	–6% in 6 days	–11% in 7 days
Average time to throwback/pullback ends	12 days	11 days	11 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	38%	24%	–13%	–19%
Average rise/decline for patterns without throwbacks/pullbacks	48%	26%	–14%	–26%
Percentage price resumes trend	75%	69%	54%	49%
Performance with breakout day gap	38%	22%	–14%	–21%
Performance without breakout day gap	42%	26%	–13%	–22%
Average gap size	$0.84	$0.35	$0.92	$0.63

Table 11.5 shows statistics related to size.

Height. In all cases, tall patterns see better post-breakout performance than short ones.

To use this finding, measure the pattern's height from the highest high to the lowest low. Divide the difference by the breakout price (for upward breakouts, it is the highest high in the pattern; for downward breakouts, use the lowest low). Then compare the result with the median shown in the table. A result higher than the median means you have a tall pattern; lower means a shorter pattern. For best results, select tall broadening tops and avoid short ones.

Table 11.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	46%	26%	–16%	–22%
Short pattern performance	36%	24%	–12%	–21%
Median height as a percentage of breakout price	10.6%	15.2%	10.9%	18.5%
Narrow pattern performance	39%	26%	–13%	–21%
Wide pattern performance	44%	24%	–14%	–22%
Median width	45 days	45 days	38 days	41 days
Short and narrow performance	38%	28%	–11%	–20%
Short and wide performance	35%	13%	–11%	–23%
Tall and wide performance	47%	29%	–16%	–22%
Tall and narrow performance	43%	20%	–15%	–22%

Width. In three of four contests (columns), wide patterns see better post-breakout performance than do narrow ones. The one exception happens in bear markets after upward breakouts.

I found it odd that bear market, up breakout percentages for height and width are the same. I checked my spreadsheet, and the information is correct.

To use width as an indicator, compute the time from the end of the pattern to the start (in calendar days, not price bars). If the result is

more than the median listed in the table, then you have a wide pattern.

Height and width combinations. Table 11.5 shows the performance results after combining the characteristics of height and width. Most of the time, tall and wide patterns show the best performance. In bear markets, after downward breakouts, short and wide patterns outperform. That's probably a statistical fluke, and the percentages are close, anyway.

Table 11.6 shows volume-related statistics.

Table 11.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	67% up	73% up	67% up	66% up
Rising volume trend performance	42%	27%	–14%	–23%
Falling volume trend performance	41%	19%	–13%	–20%
Heavy breakout volume performance	41%	25%	–14%	–21%
Light breakout volume performance	43%	24%	–13%	–23%

Volume trend. Volume trends upward from 66% to 73% of the time on average. However, don't throw away a trade because the pattern has a downward volume trend. Try to recycle.

Rising/Falling volume. Half the time, the volume trend doesn't really matter to performance. In bear markets, we see a wider

separation of results. For example, after upward breakouts in bear markets, price averages a climb of 27% compared to just 19% for patterns with falling volume. The sample counts (146 versus 54, respectively) are not as robust as I like to see, so the results may change.

Breakout day volume. The broadening top is a rebel: It doesn't conform to common wisdom about heavy breakout volume (which is, heavy breakout volume helps performance). As the table shows, sometimes it helps, sometimes it hurts, and half the time it can't make up its mind. However, as a general rule, you should see improved performance (probably meager) if breakout day volume is above the prior 30-day average.

I added **Table 11.7** to this edition to highlight where price might stop on the way to the ultimate high or low. For example, I found that 79% of the time, price will return to the top of the pattern after an upward breakout. You'll likely be stopped out a lot if you choose to place a stop-loss order there.

Place a stop at the bottom of the pattern and a stop-loss order will be hit less than 5% of the time, on average. However, the size of the loss, after an upward breakout, could be large, so do consider the size of the potential loss before deciding where to place a stop.

Table 11.8 shows how the chart pattern performed over three decades. This table only shows bull market numbers because bear markets only happened in the 2000s.

Table 11.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	79%	79%	3%	2%
Middle	24%	20%	18%	8%
Pattern bottom	4%	3%	75%	67%

Table 11.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	40%	–16%
2000s	49%	–12%
2010s	36%	–13%
Performance (above), Failures (below)		
1990s	14%	17%
2000s	15%	29%
2010s	23%	33%

Performance over time. Upward breakouts saw the best performance and downward breakouts saw the worst performance in the 2000s. That makes sense. If the market is rising after an upward breakout, those patterns with downward breakouts will struggle to see price drop. It's like trying to swim against the current.

Failures over time. Failures have increased over the three decades for both upward and downward breakout directions. That's not a good omen for future performance.

Table 11.9 shows busted pattern performance. See the Glossary ("Busted pattern") for details on what a busted pattern looks like and how to spot one. Don't forget your binoculars.

Busted patterns count. Almost half (47%) of broadening tops will bust in bull markets after downward breakouts. Notice that the fewest busted patterns happen after downward breakouts in bear markets. There you have the market current (downward) carrying along price as it drops after a downward breakout. The sample count, at 30, is tiny compared to the some of the others.

Busted occurrence. I counted the types of busts (single, double, or more than two) and found that single busts happen most often. In second place for downward breakouts is triple (or more) busts.

Busted and non-busted performance. I compared the performance of all busts (one, two, and triple+) with single busted and patterns that don't bust (non-busted). Busted patterns outperform when the busted breakout direction matches the market

trend (upward breakout in bull markets and downward breakout in bear markets).

Table 11.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	351 or 29%	57 or 29%	379 or 47%	30 or 15%
Single bust count	176 or 50%	42 or 74%	252 or 66%	21 or 70%
Double bust count	115 or 33%	11 or 19%	12 or 3%	4 or 13%
Triple+ bust count	60 or 17%	4 or 7%	115 or 30%	5 or 17%
Performance for all busted patterns	–14%	–20%	38%	38%
Single busted performance	–22%	–25%	55%	53%
Non-busted performance	–13%	–22%	42%	25%

Recall that after upward breakouts in bull markets, the stock will bust by dropping. So the stock is heading down (and showing better performance, too!), even as the general market is rising. The same applies to busted downward breakouts (price rises) in bear markets (many stocks drop).

Why does this happen? My only guess is that stockholders know a good or bad situation when they see it and trade with enthusiasm, in spite of what's happening in the general market.

Trading Tactics

Table 11.10 outlines trading tactics for broadening tops.

Measure rule. The first thing to consider about trading tactics is the measure rule. The measure rule predicts the price to which the stock will move (in theory). For many chart patterns, one simply computes the height of the chart pattern and adds or subtracts the height from the breakout price. Apply the same method to broadening tops.

Consider Figure 11.5 as an example. The height of the broadening top is the difference between the highest high (B, 12.13) and the lowest low (A, 10), or 2.13. For upward breakouts, add the height to the highest high in the chart pattern, giving a target of 14.26, as shown in the figure.

For downward breakouts, subtract the height from the bottom of the pattern, giving a target of 7.87. If the computation gives a target below zero, then don't use the measure rule. If the target is too far away (21% in this case), there's a good chance price won't drop that far. Use common sense.

Table 11.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height between the highest high and the lowest low in the pattern. Add the height to or subtract it from the highest high or lowest low, respectively. The result is the target price for upward and downward breakouts. The bottom portion of the table shows how often the measure rule works.
Go long at the bottom	Once a broadening top appears, buy after the stock makes its turn at the bottom trendline.
Long stop	Place a stop-loss order 15 cents below a nearby minor low. Should the stock reverse course, you will be protected.
Go short at the top	Sell short after price starts heading down at the top.
Short stop	Place a stop 15 cents above a nearby minor high to protect against an adverse breakout. Cover the short when it turns at the bottom trendline and starts moving up. For a downward breakout, cover as it nears the target price or any support level.
Partial rise and decline	Go long if a broadening top shows a partial decline. Consider adding to your position once it makes an upward breakout. Partial declines work 72% of the time in bull markets. Partial rises (downward breakout, bull markets) work 52% of the time.
Stop location	See Table 11.7 for stop location guidance.
Busted trade	Table 11.9 can help with busted patterns.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	83%	73%	70%	73%
Percentage reaching full height target	66%	52%	42%	46%
Percentage reaching 2× height	48%	26%	19%	24%
Percentage reaching 3× height	37%	18%	9%	13%

The bottom portion of the table shows how often price reaches the measure rule target. For the full height (as in our example above, bull markets, upward breakouts), price will reach the target 66% of the time. You can adjust the height to get different targets that may be easier or harder for price to reach.

Once you know the target, read the text associated with Table 11.3 to see if the potential move is reasonable.

How do you make use of the measure rule? Imagine that you are considering purchasing the stock. Try the following tips:

Go long at the bottom. Since a broadening formation should have five touches (three on one trendline, two on the other) before it becomes valid, point A in Figure 11.5 shows one likely investment location. Before placing the buy order, compute the target price using the measure rule. The target price will help you determine if the potential gain is worth the risk.

In the example shown in Figure 11.5, the purchase price is about 10.38 (at A) and the target price is 14.25, a 37% move. The stop-loss should be 9.85 (15 cents below the low at A), for a potential loss of

5%, which gives a reward-to-risk ratio of 7 to 1, more than enough to risk a trade.

Long stop. Buy the stock soon after it touches the lower trendline and moves higher (after the pattern has fully developed following the identification guidelines). Place a stop-loss order 15 cents below the lowest low (0.15 below point A). Should price drop, your position will likely be sold before a large loss occurs.

Price climbs across the pattern. Be ready to sell once price reaches the prior minor high. Confused? Look at Figure 11.3. On the way to point 5, be prepared to sell as the stock climbs to the price of point 3. Price may pause for a bit before moving higher and tagging the top trendline, or it may reverse at this point (which it does in Figure 11.3, at point 5). Make sure your stops have been raised to protect your profits.

Go short at the top, short stop. For short positions in broadening tops, open the short after price touches point B (Figure 11.5) and begins heading down. Place a stop 15 cents above the highest high (12.28 in this case) to limit losses. Lower your stop to the next minor high or apex of the broadening top (either 11.88 or 11.13 in Figure 11.5) once the stock nears point A. Sometimes the stock will not make it down to the trendline before beginning to move up. At other times, there is a lengthy pause before price turns around or continues down. A lower stop-loss point helps you achieve at least some measure of profit.

Partial rise and decline. Partial rises and declines are like deer in mating season when you're driving: Look out for them. See the Glossary (“Partial rise” or “Partial decline”) for details on spotting the pesky critters. When you see a partial rise or decline, place a trade once the stock reverses course. If a breakout happens, then consider adding to your position.

Using a partial rise or decline to enter a trade before the breakout is a reliable trading technique. You get in at a better price, and they accurately predict the breakout direction.

Stop location. Use Table 11.7 for guidance on stop placement.

Busted trade. Consult Table 11.9 for tips on trading busted patterns. If you are lucky enough to trade a single busted pattern, you can make

a lot of money.

Experience

Let me tell you about what I found in my trade review.

Advanced Micro Devices Inc.

Advanced Micro Devices Inc. (AMD) formed a broadening top in the first half of 2001. Here's my notebook for the trade entry: “2 August 2001. I bought at the market, filled at 19.64. The stock has bounced off the bottom of a broadening top. I hope prices will race across the pattern, but expect them to stall at 22, with eventual push to 25. Downside is old low at 16, or lower [trendline] boundary. Upside is 25, with possibilities of a climb into the high 30s. Resistance at 22, 25, 30. I expect a climb to 25 where it may be time to sell. Book score is +1, assuming an upward breakout.”

The book score is based on my book, *Trading Classic Chart Patterns*, which describes a scoring system to help improve selecting patterns that outperform. In this case, it didn't apply because the breakout was downward.

Notice that I didn't dwell on the potential loss (in percentage terms). Had I pondered that, I might have avoided this losing trade.

- Lesson: Don't forget to assess the potential loss and avoid the trade if the loss is too high.

I bought the day the stock peaked. It dropped from there and soon was at the chart pattern's bottom trendline and dropping below it.

Here's my notebook: “15 August 2001. I sold at market. Fundamentals have changed with IBM saying they will no longer buy AMD-based computers because customers prefer Intel. The stock has completed a partial rise and is expected to break out downward from the broadening formation. Yesterday, [the stock] closed below the 16 stop price, so it was time to sell. With September [traditionally the weakest month of the year] and October approaching, it's probably wise to exit the market. On the other hand, I don't really see the stock going much lower and expect that I sold near the bottom.”

In fact, the stock continued lower. Much lower. I sold at 15.70 for a 20% loss, but the stock bottomed at 7.69 or 51% below my sale price.

As big as my loss was, I'm glad I sold.

Looking at the chart for the buy, the stock was well away from the bottom trendline, moving higher at a brisk pace (6 days in a row, it made a higher high). Maybe that was an indication of weakness. How long can the stock continue such a strong push upward? Perhaps running the chart through a momentum indicator would have provided a clue to the underlying weakness.

In this trade, I entered late but made a perfect exit (on the day price broke out downward).

- Lesson: Before buying, don't be afraid to use technical indicators to uncover a weakening trend.

Chico's FAS

The 2009 bear market ended for Chico's FAS (CHS) in January, and the stock moved higher, ahead of the general market which didn't bottom until March. In June and July, the stock took a breather and formed the broadening top. I bought at what looks to be about a week before the breakout, just as price moved sideways at the top of the pattern. “24 July 2009. Buy reason: Broadening top. New management took over in January–February, so a turnaround is in place.” This was a buy-and-hold stock because I wanted to participate in the turnaround. Upside target was 17 and 27. The downside? “Stop: 8.94 –17.5%. Stop used: None. Long-term holding, but 8 is a good exit price.”

The stock performed, moved up in a graceful turn, and peaked at 16.57 on 26 April 2010, quite close to my 17 target. I should have sold there. The stock was just 2.6% below my target, having made it there in less than a year. Hindsight...

- Lesson: If the stock closes within 3% [or pick a value] of the target, consider selling.

The day the stock peaked, I placed a conditional order to sell the stock if the previous close was at or below 13.73 by October 2010. The order was 17% below the current high, but that's fine for a buy-and-hold, which often doesn't use stops at all.

About 3 weeks after the stock peaked, the company announced earnings that the market didn't like. The stock gapped open lower and continued down. Here's where the story gets strange.

The stock dropped all the way back to 8.22 (on 24 August, a 50% drop from the peak), but the conditional order never triggered. I must have removed the order but never made a note of it.

On 5 July, I wrote this: “This is well past the time to sell, but since I have so few bucks in it, don't worry about it.”

So the stock was within a handshake of my target and then dropped in half. *Oops*. I am tempted to write that I wasn't paying attention, but I was. I placed the conditional order the day the stock peaked, so my mind was in the game.

Anyway, fast forward to March 2012 after the stock had recovered and made what looked like two rounded turns. “I placed a trailing stop at 1 point below the bid, GTC [good till canceled] until 1 July 2012.” Two weeks later, I canceled the trailing stop of 14.64 and raised it to 14.91 because, “I think this is going to drop. It's a good earnings event pattern, and I don't want to ride it down a buck before it moves higher. Stop placed just below support.”

Four days later, I was out of the stock. “Sell reason: Hit stop. I was worried that the overhead resistance area would repulse shares and send the stock down after the good earnings event. I didn't want to ride it back down. My guess is this will drop but not much before resuming the up move providing the market moves higher. It has been [moving higher] but just by a little each day. If the market drops, which I expect, it should take this stock lower, too. But so far, I've been waiting for the general market to tank, and it hasn't.”

The stock *did* continue lower but only by 9% below my sale price. The stock peaked about a year later at 19.95 before sliding all the way down below 1 in April 2020.

I made 42% on the trade (including dividends), but it took just over 2.5 years to do that. However, that's almost 16% a year, which is quite good.

This lesson is worth repeating, though…

- Lesson: If the stock closes within 3% [or pick a value] of the target, consider selling.

Southwest Airlines

Southwest Airlines (LUV) made a broadening top going into 2001. Prices in the following notebook entries have not been adjusted for the 3:2 stock split. On 26 January, “I bought at the market on a broadening top, price is at [the] lower trendline, but moving up. The [company is] successfully hedging their fuel costs. I expect oil prices to decline, FED [Federal Reserve] to ease interest rates next week, and economy to slowly rebound.

“I actually think this will be a loser trade, but broadening top chapter in new book [this one] says it is a strong candidate to buy. I expect a partial rise with downside breakout. Upside is formation top at 35, downside is stop-loss at 27.30, call it 27.25, for a 10% decline. If it closes below 28, that is sell signal. Dump immediately. Filled at 30.39.”

I didn't buy exactly at the bottom of the broadening bottom (28.20), so that's something I can improve on.

- Lesson: Try to buy as close to the optimum entry price as possible (the lower trendline in this case).

The stock continued to move higher, but halfway up the chart pattern, it stalled. That's common and wasn't a cause for concern until price started backtracking.

“12 February 2001. I sold at 31.18 because of a partial rise on the broadening top. Since I believe this is going down, there was no sense to wait for it to close below 28 before dumping. I made a small profit, about 2.5%.”

For a swing trade, I got in late and exited late, too, hurting the profit margin. Looking at the chart, the picture looks like a head-and-shoulders top. The partial rise is the right shoulder, and it's at the height of the left shoulder. I should have been prepared for the stock to turn lower there because of the mirror on the left side of the pattern.

- Lesson: As price moves, pay attention to the surrounding price landscape for clues to how the stock may behave. Look for support and resistance areas where the stock might reverse.
- Lesson: Play with price mirrors.

Price mirror: Pick a vertical turning point on the price chart and reflect the left side of the chart onto the empty, right side. The peaks and valleys on the right, in the future, might match the ones that happened in the past. It's better than sex when it works, and it gives you some idea of what the future could bring.

For example, if you were to flip the chart across the head of a head-and-shoulders top, you'd see that the right shoulder will match the distance and price of the left shoulder. You can continue the analysis for the rest of the chart, too, giving both price and time on the turns.

Sample Trade

“If you wait long enough,” Sandra sold me, “you get rewarded.”

My stomach growled. I was wondering if she'd reward me with a meal. She's a terrific cook. Instead, she pulled up Figure 11.5 on her computer screen.

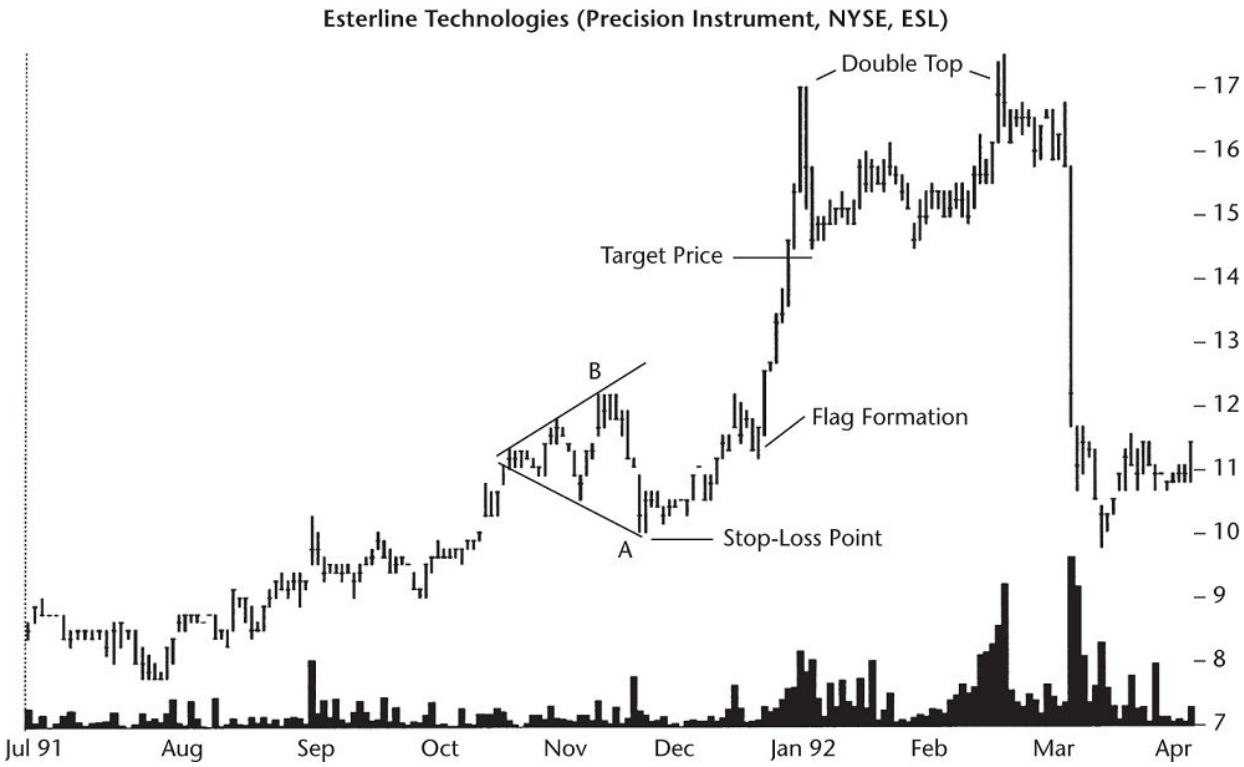


Figure 11.5 Use the measure rule to compute the target price. First, compute the formation height from the highest high to the lowest low, then add or subtract the height from the highest high or lowest low, respectively. Depending on the breakout direction, the result is the expected target price.

“Two days after the stock bottomed [at A], I bought at 10.50. I placed a stop 15 cents below the bottom of the pattern [below A] for a potential loss of 6%.”

She applied the measure rule and was looking at a target of 14.25. If everything worked as expected, that would give her a profit of over 35%.

“When price paused here,” she pointed near the start of the flag, “I wondered if the trend was going to reverse. I thought about cashing

out and running to the bank, but didn't. I decided to drive."

She winked at me and smiled at her pun.

"The flag formed, and I hoped it would be a half-staff pattern, meaning the flag was halfway up the move." If that were true, she could expect a climb to 13.25 (that is the distance from the top of the flag (12.13) to the start of the move at 10.00 projected upward using the lowest low in the flag at 11.13).

A few days later, the stock not only fulfilled the measure rule for the flag, but for the broadening top as well.

"Did you sell?"

"No."

"Why not?"

"Because the stock was moving up. I decided to let my profits ride. However, I did raise my stop to 11.85," which was below the top of the flag and also below the high at B. "I thought it was a support area and hoped the stock would rebound before taking me out."

"In mid-February, just after the second peaked at 17, I saw a potential double top pattern. I raised my stop to 15 cents below the double bottom's confirmation point, or 14.25."

About 2 weeks after raising her stop, her position sold when the stock plunged from the prior close at 15.63 to 12.13. After commissions, she made 33% in less than 4 months.

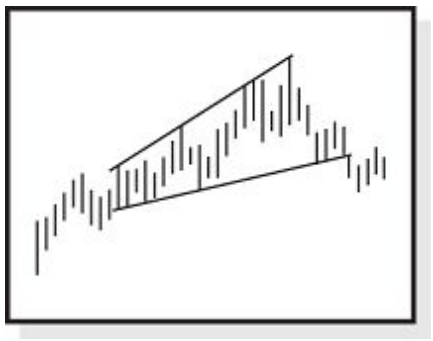
My stomach growled again.

"Yes, I'll feed you. I make this killer Swiss cheese, macaroni, and veggies casserole, lightly topped with toasted breadcrumbs. It has enough carbs to power the city. Let's go."

She grabbed my hand, towed me to her kitchen, and handed me a carrot peeler.

"What's this?" I asked.

12
Broadening Wedge, Ascending



RESULTS SNAPSHOT

Appearance: Price follows two up-sloping trendlines that diverge.

Upward Breakouts

Reversal or continuation	Long-term bullish continuation
Performance rank	23 out of 39
Breakeven failure rate	15%
Average rise	41%
Volume trend	Upward
Throwbacks	68%
Percentage meeting price target	61%

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	33 out of 36
Breakeven failure rate	31%
Average drop	12%
Volume trend	Upward
Pullbacks	62%
Percentage meeting price target	71%

The Results Snapshot shows statistics for the ascending broadening wedge. Since the pattern is so rare in bear markets, I limit discussion to bull markets only.

Upward breakouts show a rank that's mid-list, but downward breakouts show performance near the bottom of the list of all chart patterns. Notice how the failure rate for downward breakouts (31%) is twice that of upward breakouts (15%). It sends a shiver down my bones.

Downward breakouts in bull markets have failure rates (31%) well above the average 24.7% of all chart pattern types. If you're expecting a big drop after this pattern breaks out downward, then you'll be disappointed. Of course, that's based on the average performance drop of 12%, so your pattern may perform differently. For the glass-half-full crowd, you can buy a busted downward breakout, and there's a good chance it'll single bust, meaning a higher profit potential when price rises.

The rise after an upward breakout (41.1%) is slightly below the average for all chart patterns (42.4%), so even upward breakouts see price struggle. Let's take a tour of this pattern first and crunch the numbers later.

Tour

What does an ascending broadening wedge look like? Consider the chart pattern in **Figure 12.1**. The first thing to notice is the two sloping trendlines. The top line has a slightly steeper slope than the bottom one. Together, the two lines diverge but both slope upward. Once price pierces the bottom trendline, it drops rapidly in this example. The chart looks like a long, pie-shaped wedge that slopes uphill. The uphill tilt is why it is called an ascending broadening wedge. Price bounces up and down and is contained by two diverging trendlines.

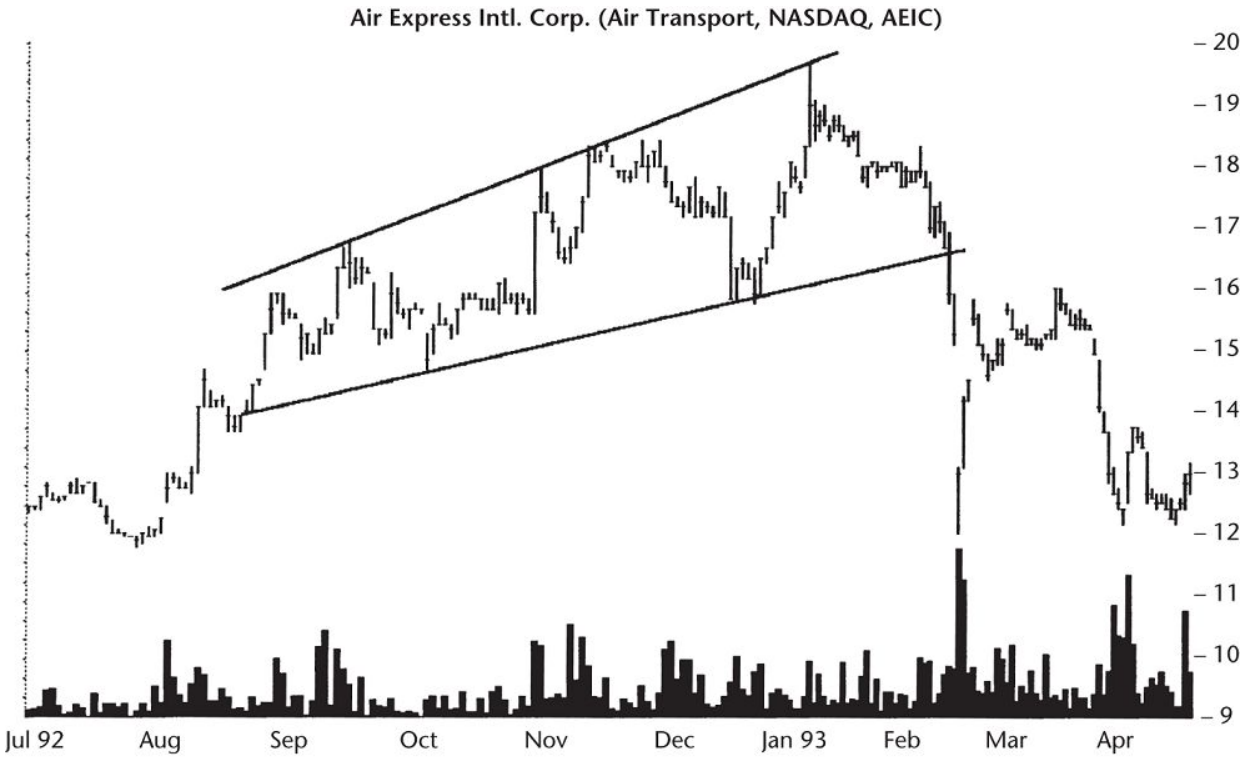


Figure 12.1 An ascending broadening wedge has two up-sloping trendlines that contain price that broadens over time.

Figure 12.2 shows a better example of a broadening wedge. Why better? Price crosses from down to up plenty of times, and it looks tighter, with the swings closer together than in the prior chart.

Both Figures 12.1 and 12.2 show a similar situation. The chart pattern appears at the end of a rising price trend and signals a reversal. Although a reversal is not always the case, nor is the chart pattern

required to be at the end of a rising price trend, both situations occur more often than not.

Figure 12.2 also shows an interesting pattern that is instrumental in identifying the start of a new price trend: the partial rise. Near the end of the wedge, after touching the lower trendline, price again moves up but fails to touch the top trendline. As price descends, it pierces the lower trendline and continues moving down. That's how partial rises are supposed to work: Price should approach, but not come that close to, the top trendline before heading back down and making an immediate downward breakout.

The chart also shows a similar situation that occurs earlier in the price pattern (shown on the chart as “Failed Partial Rise”), around the start of the year. Price has touched the two trendlines at least five times, so it looks like a valid and established ascending broadening wedge. Price rises in its attempt to touch the top trendline but fails. The trend heads down and forms a partial rise, right where you'd expect it to form: at the patterns' end (as of that date, anyway). If the partial rise worked, we should see an immediate downward breakout.

Figure 12.2 The broadening feature of the wedge is clear in this chart. The partial rise and failure to touch the upper trendline is a signal of an impending downward breakout.

Oops. It doesn't happen. Price bounces off the bottom trendline and zooms up to touch the upper trendline, forming the tallest peak in the pattern.

Why does a broadening wedge form, anyway? Pretend that you are the head of a mutual fund that has big bucks to spend and wants to buy shares in another company. When the price is low, you instruct your trading department to begin buying. The sudden buying demand forces price to climb even though the trading department spreads its orders over several days.

The trading department tries to keep its buying quiet, but word gets out that you are in the market. The momentum players jump on your coattails and ride the stock upward by buying, too. This sends the stock higher than you expected, so your trading department stops buying for the moment.

Value investors and swing traders, sensing an overbought situation, are willing to sell their shares at the higher price. Soon the stock is

moving down again. But before it can reach its old low, the buy-the-dip crowd jumps in and halts the decline. Your trading department, seeing a higher low form, jumps back in and buys while the price is still reasonable. Some new traders join the hype and decide the stock is worthy of a trade and add to the buying pressure.

The company itself gets into the act and buys shares authorized by the board of directors as a share-buyback program announced long ago. The buyback program is nearing the expiration date, and the company feels it is the right time to buy to complete their promise to shareholders.

The stock makes a new high. When it climbs high enough, selling pressure overwhelms buying demand and sends the shares lower, but the price will not drop far—not with everyone trying to buy at a good price. What you have then are much higher highs from the unbridled buying enthusiasm and higher, but saner, lows as your fund and the company itself tries to buy near a fixed low price. You never quite succeed and pay higher and higher prices as the minor lows move up.

Soon, however, the stock is too pricey even for your tastes, so the trading department stops buying. Momentum players keep pushing the stock higher for a time, but selling pressure eventually takes over and the stock heads down.

Everyone has an ear to the ground listening, trying to figure out what all the excitement is about. In the distance, a rumble sounds. The same-store-sales numbers are going to be lower this quarter, the shorts say. The rumor finds sympathetic ears. The rumble heard earlier is the stampede of the smart money running for the exits. Price drops quickly. It may hover for a bit around support zones while novice investors, who have not gotten the word, buy the stock. When they finish placing their orders, the meager buying demand abates and the stock crashes through the lower trendline and heads down.

Identification Guidelines

There are a number of identification guidelines, outlined in **Table 12.1**, that make this formation unique. As I discuss the different guidelines, consider the ascending broadening wedge depicted in **Figure 12.3**. This formation is different from Figures 12.1 and 12.2 in that it is born from a region of consolidation. From the beginning of the study in July 1991 (not shown), price moves generally horizontally and does not fall much below the 15.38 level. A portion of that horizontal move appears in the figure before the start of the wedge.

Table 12.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a megaphone, tilted up, with price action that outlines two up-sloping but diverging trendlines.
Trendlines	The top trendline has a steeper upward slope than the lower one and neither is horizontal.
Touches	There should be at least five distinct touches (or near touches) of the trendlines (three on one side and two on the other). This helps assure proper identification. Each touch should be a minor low or minor high, not when price slices through the pattern's trendline.
Whitespace	Select patterns where price crosses the wedge from top to bottom frequently, filling the whitespace.
Volume	Irregular with a tendency to rise over the length of the chart pattern. Do not discard a chart pattern because of an unusual volume trend.
Breakout direction	The breakout direction is almost random, but it favors a downward direction slightly more often than upward.

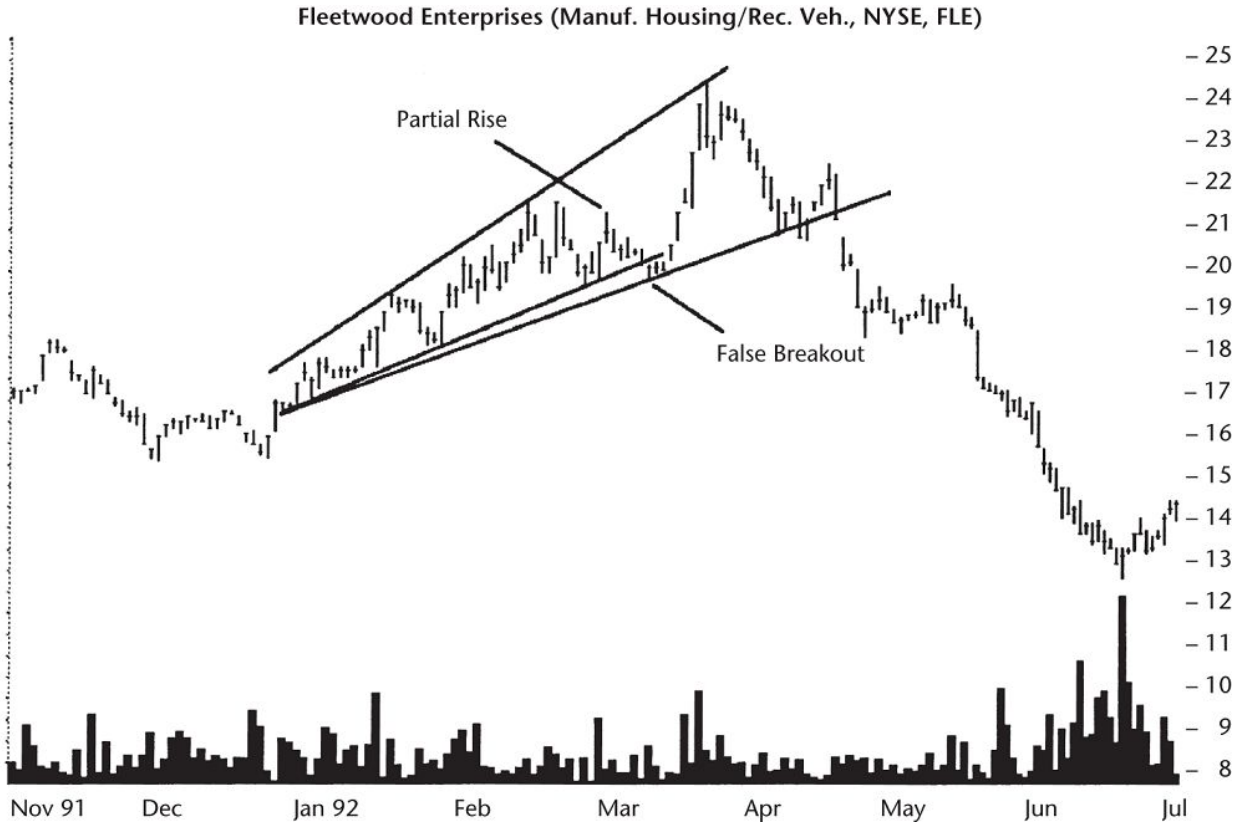


Figure 12.3 A broadening formation fails to continue moving down, requiring a redraw of the formation boundaries. The internal partial rise is rare, occurring in about 5% of wedges.

The situation changes just before the new year. Price starts moving up on 23 December. The stock reaches a new high in mid-January but soon moves down. At that point, two tentative trendlines connect the highs and lows. Although it is too early to form a definitive conclusion, a broadening wedge appears to be taking shape. After price moves up and touches the upper trendline, then pulls back to the lower one again, the broadening wedge formation is clearly visible. At the start of March, price moves higher but quickly stalls, turns around, and pierces the lower trendline. The partial rise and trendline penetration suggest a trend change is at hand.

Price has broken out downward, but it only lasts for 3 days, moving in a tight congestion pattern that sees price zoom upward and touch the top trendline. If you're so inclined, redraw the bottom trendline to accommodate the slight decline below the old trendline. Clearly, price has more work to do before declining below the lower trendline again.

A month later, price returns to the bottom trendline and moves higher for a few days. However, the rise stalls and price pierces the lower trendline. Like a replay of the price action a month earlier, price pulls back to the trendline and starts moving higher. However, this rise falters on low volume and price quickly returns to the lower trendline. When price gaps down on 16 April, another breakout (a genuine one this time) occurs. In rapid fashion, price plummets to below 12.75, nearly a 50% decline from the high.

Appearance. Looking back at Figures 12.1, 12.2, and 12.3, there are several characteristics that ascending broadening wedges share. The overall shape appears as a megaphone, but this megaphone tilts upward: Both trendlines slope higher. The upper trendline has a higher slope than the lower one, giving the formation a broadening appearance.

Trendlines. The two trendlines outlining the wedge diverge, but both trendlines tilt upward.

Touches. In my studies of ascending broadening wedges, I select formations that have at least five touches total (three of one trendline and two of the other). The five-touch minimum helps identify reliable chart patterns. Each touch should be a minor high or minor low. If price cuts through a trendline, such as at the start of end of the wedge, it doesn't count as a valid touch.

Whitespace. The pattern should have price crossing from top to bottom frequently. Avoid patterns with a big chunk of whitespace.

Volume. The volume pattern is irregular (which is common for long patterns) but generally rises as price moves up and recedes as price declines. Although it is not clear from the charts, volume tends to rise over time. However, an upward volume trend is not a mandatory selection guideline. If volume trends down, then that's fine.

Breakout direction. Figure 12.3 shows a false breakout. Usually, price follows the lower trendline and does not penetrate it until the actual breakout. When price does break out, the price action can be messy, as shown in the figure. Sometimes price runs straight through the lower trendline without pausing, and sometimes it weaves around the trendline before finally continuing down.

Price can break out in any direction but leans toward a downward one.

Focus on Failures

Figure 12.4 shows what a failure looks like. Although price breaks out downward from the wedge, the stock fails to continue moving lower. The breakout occurs at a price of 50.13 and price drops to a low of 48.63 about 2 weeks later, resulting in a 3% decline—too small to register as a success.

Any breakout move no more than 5% I consider a failure (a 5% failure). After a downward breakout, you'll often see price struggle to drop. Maybe it's because price trends upward in the pattern (both trendlines tilt up) so there's buying demand waiting under the stock to keep the uptrend going. A downward breakout smashes into that buying demand, surprising and overpowering the sellers, and price rises.

Left behind is a meager drop. Of course, that's not always the case. If fundamentals deteriorate or if a large stockholder wants to dump their position (now!), it could send price plummeting. Swing traders and momentum players will join the fun and help push price lower.

However, the numbers suggest that this chart pattern sees price struggle to drop. Indeed, 31% fail to see price decline more than 5% after a downward breakout. That's good news for longer term holders of the stock (like buy-and-hold investors). If the decline after an ascending broadening wedge is meager, then why worry?

Figure 12.4 An ascending broadening wedge that fails to continue moving down. Price declines less than 5% below the breakout price before moving higher.

Table 12.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	329	361
Reversal (R), continuation (C) occurrence	19% R, 81% C	81% R, 19% C
Reversal, continuation performance	35% R, 42% C	–12% R, –13% C
Average rise or decline	41%	–12%
Standard & Poor's 500 change	11%	–2%
Days to ultimate high or low	232	52
How many change trend?	54%	21%

Let's look at the numbers to get a better sense of how this pattern behaves.

Statistics

Table 12.2 shows general statistics for ascending broadening wedges.

Number found. I found the first pattern in July 1991 and the most recent in July 2019, totaling 767 patterns in 529 stocks. Not all stocks covered the entire time. After removing bear market statistics, we have a similar number of patterns with up and down breakouts.

Reversal (R), continuation (C) occurrence. Upward breakouts from the broadening wedge act as continuation patterns (meaning price trended upward into the start of the pattern). Downward breakouts acted as reversals most often.

Reversal/continuation performance. Mapping performance of reversals and continuations shows that patterns acting as continuations outperformed reversals for both breakout directions. However, performance for downward breakouts is about even.

Average rise or decline. The table shows only bull market statistics, so when the breakout goes against the prevailing market trend, performance suffers. Thus, it is more profitable to trade with the prevailing market trend instead of against it. That means trading upward breakouts in a rising market.

Standard & Poor's 500 change. From the date of the wedge's breakout to the ultimate high or low, I checked the performance of the index. You'll notice that the index didn't fare as well as the chart pattern.

You might also conclude that the general market helped boost the performance of the individual stocks. The boost was higher in bull markets (with the index rising 11%, helping to achieve a 41% average chart pattern rise).

Days to ultimate high or low. Upward breakouts took their sweet time (about 8 months) rising 41%. Downward breakouts took only about 7 weeks to reach the ultimate low. Checking the two velocities, we find that downward breakouts reach the ultimate low faster than upward breakouts reach the ultimate high.

How many change trend? This measures how many patterns see price rise or fall more than 20%. For upward breakouts, I consider a

value above 50% good. Downward breakouts seem to always suffer under this gauge.

Table 12.3 shows failure rates. How do you make sense of the numbers? Let me share some examples. In bull markets after downward breakouts, 31% of the patterns failed to see price drop more than 5%. Upward breakouts showed half the failure rate: 15%.

Notice how the failure rates rise quickly as the maximum price rise or decline increases. For example, over half the patterns with downward breakouts (57%) fail to see price drop more than 10%. Upward breakouts don't reach the 50% threshold until price fails to drop more than 25%.

Table 12.4 shows breakout-related statistics.

Breakout direction. The breakout direction is about random but favors a downward breakout. Of course, additional samples might change this.

Yearly position, performance. Mapping performance of wedges onto the yearly price range, we find that upward breakouts with the breakout price within a third of the yearly high perform best. Downward breakouts do better if the breakout price is near the yearly low.

Throwbacks and pullbacks. Throwbacks and pullbacks occur about two-thirds of the time, and it takes the stock between 11 and 12 days to return to the breakout price. The move between the breakout and the apex of the throwback or pullback isn't large enough (4% or 5%) to consider a swing trade to capture the move. Other chart pattern types see price move farther away from the pattern than do wedges. I'd look at those patterns for a throwback or pullback swing trade.

Table 12.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	50 or 15%	112 or 31%
10	39 or 27%	94 or 57%
15	36 or 38%	44 or 69%
20	26 or 46%	34 or 79%
25	22 or 53%	27 or 86%
30	19 or 58%	16 or 91%
35	8 or 61%	13 or 94%
50	32 or 71%	19 or 99%
75	37 or 82%	2 or 100%
Over 75	60 or 100%	0 or 100%

Table 12.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	48% up	52% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 19%, M 35%, H 43%	L –15%, M –12%, H –11%
Throwbacks/pullbacks occurrence	68%	62%
Average time to throwback/pullback peaks	4% in 6 days	–5% in 5 days
Average time to throwback/pullback ends	12 days	11 days
Average rise/decline for patterns with throwbacks/pullbacks	38%	–11%
Average rise/decline for patterns without throwbacks/pullbacks	47%	–14%
Percentage price resumes trend	80%	55%
Performance with breakout day gap	32%	–16%
Performance without breakout day gap	43%	–12%
Average gap size	$0.32	$0.52

Notice that when throwbacks and pullbacks occur, performance suffers. Because the performance difference is wide, you'll want to avoid nearby support or resistance (which might cause a throwback or pullback to happen).

Gaps. According to the statistics in the table, sometimes a breakout day gap helps performance (downward breakouts) and sometimes it hurts (upward breakouts). In other chart patterns, we usually see a performance boost if a gap occurs, but often the boost is minor.

Table 12.5 shows pattern size statistics.

Height. Height is an excellent predictor of future performance (taller ones do best)—except for this chart pattern, at least for upward breakouts. Downward breakouts perform best if the pattern is tall.

Width. For other chart pattern types, wide patterns outperform narrow ones. In this case, narrow patterns with upward breakouts do well and wide patterns with downward breakouts show a minor performance improvement.

Height and width combinations. Tall and narrow patterns outperform. Placing last for performance are short and wide patterns. As you would expect, narrow patterns with upward breakouts do best and tall patterns with downward breakouts outperform on average. There's a large enough swing between the various numbers that you might want to confine your trading to tall and narrow wedges.

Table 12.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	41%	–15%
Short pattern performance	41%	–10%
Median height as a percentage of breakout price	14.8%	18.7%
Narrow pattern performance	43%	–12%
Wide pattern performance	39%	–13%
Median width	55 days	59 days
Short and narrow performance	42%	–10%
Short and wide performance	39%	–9%
Tall and wide performance	39%	–15%
Tall and narrow performance	45%	–16%

Table 12.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	66% up	67% up
Rising volume trend performance	41%	–12%
Falling volume trend performance	42%	–13%
Heavy breakout volume performance	39%	–12%
Light breakout volume performance	47%	–13%

Table 12.6 shows volume-related statistics.

Volume trend. Volume trends upward as measured from the start of the pattern to the end. Does the trend direction matter? Let's find out:

Rising/Falling volume. I sorted performance by whether volume was rising or falling in the pattern. Patterns with a receding volume trend do slightly better but not enough to worry about.

Breakout day volume. Light breakout day volume sees price move farther than heavy breakout volume. That finding goes against conventional wisdom. Light volume has only 96 samples (compared to 233 for heavy volume, upward breakouts only), so it could be a sample count thing. That means more samples might change the results.

Because of the way I calculate stops, **Table 12.7** (how often stops hit) does not apply to this chart pattern, so I left it off.

Table 12.8 shows the performance over three decades.

Table 12.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	42%	–15%
2000s	41%	–10%
2010s	41%	–12%
Performance (above), Failures (below)		
1990s	10%	22%
2000s	13%	36%
2010s	22%	42%

Table 12.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	61 or 19%	151 or 42%
Single bust count	36 or 59%	125 or 83%
Double bust count	20 or 33%	5 or 3%
Triple+ bust count	5 or 8%	21 or 14%
Performance for all busted patterns	–13%	41%
Single busted performance	–19%	49%
Non-busted performance	–12%	41%

Performance over time. Upward breakouts show stable performance over the last 30 years. Downward breakouts had their best performance in the 1990s and the worst in the 2000s. Bear markets were not included in the numbers.

Failures over time. Both up and down breakouts show an increasing tendency to fail over time. In other words, failures were lower in the 1990s than in the 2000s, and lower in the 2000s than the 2010s. I don't know the reason for this, but I applaud the consistency.

Table 12.9 shows busted pattern performance. See the Glossary ("Busted pattern") for tips on determining what a *bust* means, and we're not talking about anatomy or sculpture here.

Busted patterns count. As one might expect, downward breakouts have a substantially higher bust rate than upward breakouts (more than twice as often). That's not a bad thing if you want to go long after a busted downward breakout to capture a big rise.

Busted occurrence. I told my computer to count how often a pattern busted (single, double, or more than twice). Single busts happen most often. For downward breakouts, triple busts (triple+) come in second for frequency. That may sound odd, and I think it is, but it's something we've seen in other chart pattern types.

Busted and non-busted performance. Is it better to trade a busted pattern than a non-busted one? Yes, but only if you can find a single busted pattern. Comparing all three busted patterns (single, double, and three or more busts) to their non-busted counterparts, the results do not show a significant performance edge.

However, if you take pleasure from failure, then wait for a downward breakout from a broadening wedge to fail (drop 10% or less) and buy when price closes above the top of the chart pattern. There's a good chance (83%) that the pattern will single bust, leaving the clouds as your goal and a gain averaging 49%. That's if you trade it perfectly and frequently.

Trading Tactics

Table 12.10 shows trading tactics.

Measure rule, targets. The measure rule for wedges is different from most other chart patterns in that it is based on the lowest low in the pattern (for downward breakouts only). As the table shows, price reaches that target 71% of the time.

Table 12.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	For downward breakouts, use the lowest price in the wedge as the target. For upward breakouts, use the formation height added to the breakout price. The bottom portion of the table shows how often the measure rule works.
Partial rise and decline	If a stock shows a partial rise and begins to head back toward the lower trendline, consider selling short. A downward breakout should immediately follow a partial rise. For a partial decline, when price begins to turn upward, buy the stock and hope an immediate upward breakout follows. A partial rise works 60% of the time, and a partial decline works 65% of the time.
Busted trade	See Table 12.9.

Description	Up Breakout	Down Breakout
Pattern bottom	N/A	71%
Percentage reaching half height target	78%	32%
Percentage reaching full height target	61%	17%
Percentage reaching 2× height	43%	5%
Percentage reaching 3× height	31%	2%

For upward breakouts and other downward targets, I use the height of the pattern (or a multiple of it) applied to the top or bottom of the pattern.

Figure 12.6 shows two ascending broadening wedges and application of the measure rule. Both formations are well formed. The chart marks the lowest low in each wedge. The low serves as the expected target (the measure rule target for downward breakouts).

The formation on the left shows price reaching the target in mid-November just as price turns. The wedge shown on the right has price hitting the target soon after the breakout.

For targets other than the pattern's low, measure the height from the top of the wedge to the bottom of the wedge. For upward breakouts, add the height to the top of the wedge. For downward breakouts, subtract the height from the low at the start of the pattern. The result will be the target.

The lower portion of the table shows how often this works.

You can use other heights (half, two, or three times the height) in the computation to get targets closer or farther away.

Once you have a target, convert the target into a percentage of the current price. For example, if the top of the wedge is at 50 and the bottom is at 40, the height is 10. If the current price is 50, a climb of 10 would be a 20% rise. Table 12.3 says that 46% of wedges will fail to see price rise more than 20%.

If price drops, the target is 40 (bottom of the wedge) and that's a $10 drop from the current price of 50. Again, that's a 20% drop. In this case, Table 12.3 says that 79% will fail to see price drop more than 20%.

Partial rise and decline. With most chart patterns, you'll want to wait for the breakout. An exception to the rule is if a partial rise or decline occurs. Figure 12.2 shows a good example of a partial rise. It correctly predicts a downward breakout. A partial decline works in a similar manner, except price drops down from the top trendline, returns, and breaks out upward. See the Glossary (“Partial rise” or “Partial decline”) for details.

Unfortunately, partial rises and declines look like they are taking shape during a normal pause that occurs partway across the pattern. Often, I'll see what I believe to be a valid partial rise or decline and wait for the regular breakout away. More aggressive traders or those with advanced skills may want to trade partial rises and declines to get into trouble sooner.

Busted trade. If you can tell when a stock will single bust or if you just take a chance that it'll single bust, you can make more money trading the stock using a busted pattern. Downward breakouts single bust 83% of the time on average, so you've a good chance of trading a winner when it (single) busts. With the new trend direction being upward, the potential gain is higher than for a downward move (as in a downward breakout or a busted upward pattern).

When price busts the downward breakout by closing above the top of the pattern, buy the stock and ride it to heaven.

Experience

Ascending broadening wedges are rare enough that I don't look for them to trade, and their performance isn't great, either. However, I made one trade in Assurant Inc. (AIZ) that I want to tell you about. It uses a wedge.

I picture the trade in **Figure 12.5**. The wedge at A has five touches of the top trendline and three or four on the bottom. Price crosses the pattern enough to fill most of the whitespace. However, there's a big whitespace area between September and November, but that's because the pattern is so tall, it takes time for price to cross from top to bottom. The two trendlines slope upward and diverge as you would expect from an ascending broadening wedge.

I traded this stock by entering it for the first time after the bear market ended in 2009 (and sold in 2010). At E is another buy location, so I was familiar with this stock. For this trade, I bought at B.

Here's my notebook entry: “24 November 2012. This is at the bottom of an ascending broadening wedge. I am flush with cash, but have 15% in insurance co's. I'll add more to bring it up to near a [full] investment. Buy at market open on Monday. Buying at a good price, at support (chart pattern).”

Two days later, when the market opened, I bought at the open and received a fill at 34.18.

At you can see, I made a perfect entry, just three days after price bounced off the bottom trendline.

You probably can't see the price action well enough in the printed figure, but the stock did not breakout downward. A downward breakout, as you know, requires price to close below the bottom trendline, and that didn't happen. Rather, an upward breakout happened at C.

Figure 12.5 This ascending broadening wedge trade led to an 87% gain.

This is one of those fire-and-forget-type trades where you just sit back and count your winnings. Price took a week or so to gather strength before it started to move up after I bought. It retraced a portion of the move and bottomed at F, but after that, it was a smooth ride to the stars.

Fast forward to January 2014. The stock peaked a nickel below 69 and retraced. The spike down at G was because of earnings. Apparently, the market didn't like the news but recovered to close the session just 6 cents below the high.

That was my wakeup call. On 12 February, I wrote this in my trading notebook: “I sold the rest of my shares this morning. The stock has broken down through a support area at 64, and it's trading at 63.42 now. On the weekly scale, this is a 2B pattern. It LOOKS as if it's going to tumble, and since it's above my target price of 56, I did well. Selling on 2B, weakness.”

A 2B pattern isn't covered in this book, and looking at the weekly scale, it's not a 2B pattern at all. A 2B happens when price moves above a prior peak and then poops out. The stock reverses and moves

lower. Think of a narrow double top with a slightly higher right peak and you'll know what a 2B looks like.

In this case, there is no first peak to compare against. However, the note about weakness is clear. The stock peaked at almost 69 and was now trading at 63. I received a fill at 63.42 for a gain of (drum roll, please) 87% (including dividends) with a hold time of 15 months.

I sold near the bottom of a retrace. The stock climbed back up to 69.26 and then moved sideways until July 2015. It moved sideways after I sold for longer than I was in the trade!

What did I do wrong? Entry was perfect. The exit was late. The only thing I can think of to improve the exit was to use a trendline connecting F, H, and I on the log scale (this chart appears to be on the linear scale). I would have sold at the open the day after I, at 64.29, a slight improvement. But the trendline uses hindsight. A trendline would have taken me out any number of times on the way from F to H, because price curves to the right.

Sample Trade

“I work the night shift at a bakery a few streets away. I can walk to work, so it's handy. Before I go to sleep, I check my favorite stocks and found an interesting one shown in **Figure 12.6**. Let me tell you about it.”

Each day before Curtis bedded down, he plotted the stock and watched with amusement as the first broadening wedge formed. When the second one appeared, he stopped yawning and moved closer to his computer screen. The second broadening wedge didn't excite him; rather, it was the wedge coupled with a potential double top. “Together, they looked especially bearish.”

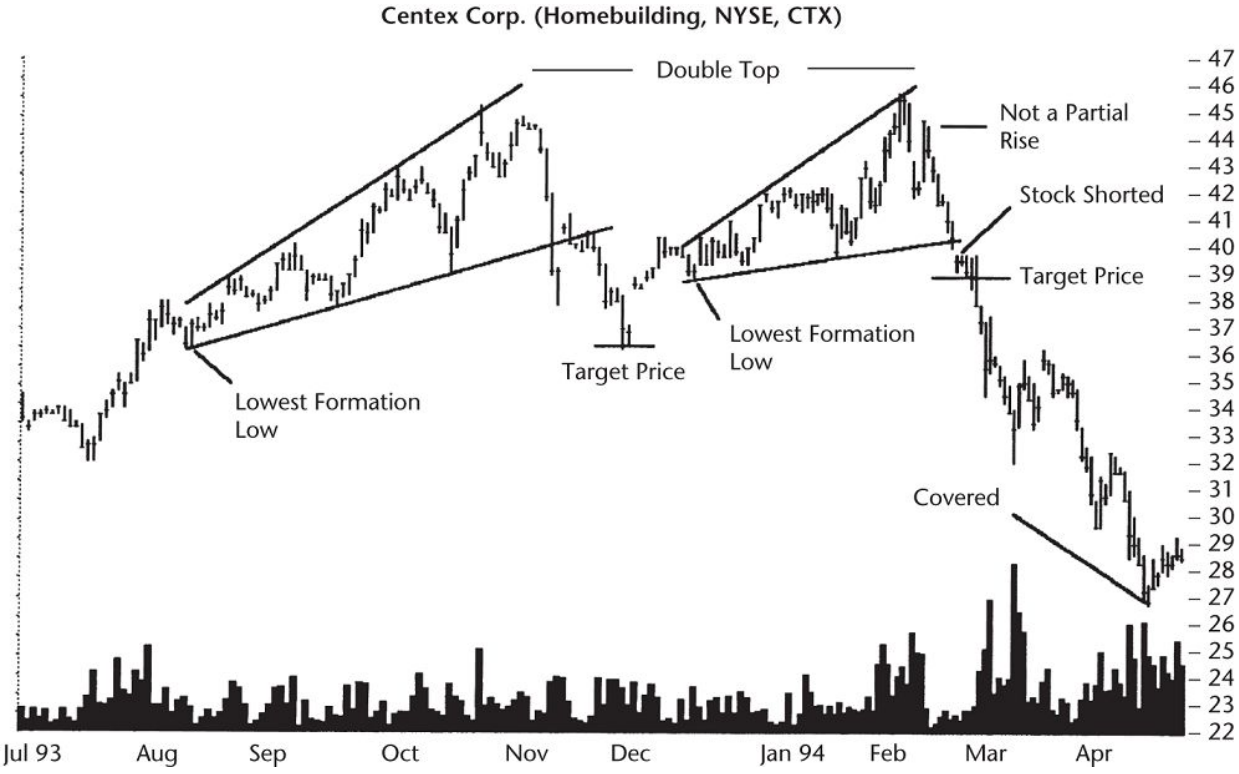


Figure 12.6 The measure rule as it applies to two ascending broadening wedges. Astute investors will recognize the twin peaks as a large double top.

The day after the stock closed below the lower trendline of the right broadening pattern, he sold short and received a fill at 39.50.

“I used the double top measure rule to estimate my price target.” With a top at 45.75 and a valley low of 36.25, the target was 26.75 (that is

45.75 – 36.25 subtracted from 36.25).

“I placed an order to cover my short at 27.13, because you always want to have protection. I put it just above the whole number and just above where everyone else was likely to place theirs. Let them get cashed out first, before me.”

He went to bed.

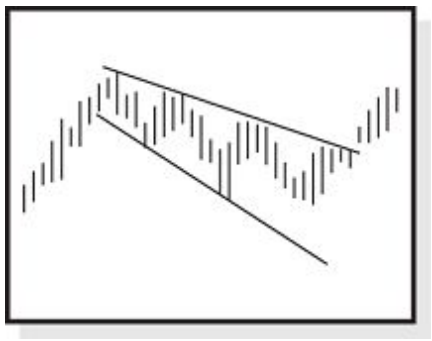
Each day, before he closed the curtains to get some sleep, he checked the stock. To him, it was pleasing to see the stock begin moving down immediately and sailing below the nearest broadening wedge target (38.88).

“I lost some sleep worrying about the upward retrace in March, and thought the party was over. But I stuck with it.”

The stock eventually pierced support and kept moving down. “I hoped that the congestion region in March was the corrective phase of a measured move down. That would place the target at 22.50, well below my target of 27.13. I'm not stupid, and I'm not greedy, so I left the target where it was.”

On April 18, a ringing phone woke him. His broker reported that they covered the short at his target price. He made about $12 a share. That put a smile on his face, and he went back to his dream of telling his boss what he could do with the night shift.

13
Broadening Wedge, Descending



RESULTS SNAPSHOT

Appearance: Price follows two down-sloping trendlines that diverge.

Upward Breakouts

Reversal or continuation	Long-term bullish reversal
Performance rank	27 out of 39
Breakeven failure rate	18%
Average rise	39%
Volume trend	Upward
Throwbacks	62%
Percentage meeting price target	83%

Downward Breakouts

Reversal or continuation	Short-term bearish continuation
Performance rank	29 out of 36
Breakeven failure rate	35%
Average drop	13%
Volume trend	Upward
Pullbacks	64%
Percentage meeting price target	32%

The descending broadening wedge has performance that gravitates toward the bottom of the list of chart patterns. However, it does have one redeeming quality. Almost half (47%) of downward breakouts will bust, and of those, 75% of them will single bust. The average rise for single busted patterns is (drum roll, please) 65%. That's huge. The computation uses 75 samples, and the median rise is 44%. Half the patterns will see price rise more than 44%. The results are something to look forward to.

Let's take a tour, look at the numbers, and see if we can figure out how to trade these patterns.

Tour

What does the formation look like? **Figure 13.1** shows a well-formed descending broadening wedge bounded by two trendlines. In September, the stock starts down in tight oscillations that broaden over time. A month later, two trendlines drawn across the highs and lows make the descending broadening wedge shape clear.

Volume at the start of the pattern is well below normal. As the wedge develops, volume is erratic, but trends higher. Computing the slope of the volume line using linear regression confirms the result: Volume is increasing. Usually increasing volume helps propel a stock upward. I like to see that in my trades as price rises to the ultimate high.

In mid-October, price gapped up (breakaway gap) and shoots above the upper trendline. An upward breakout occurs. Volume spikes and continues to be heavy for several days as price climbs.

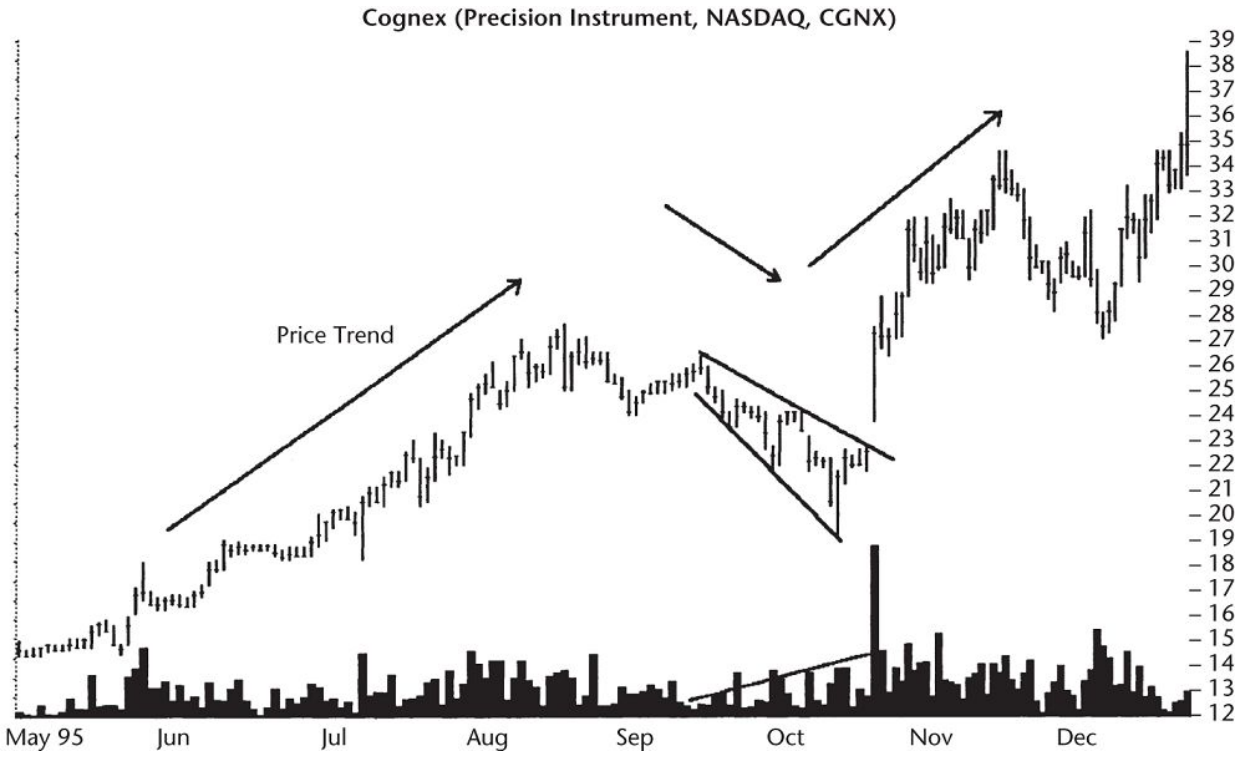


Figure 13.1 This descending broadening wedge acts as a consolidation of the upward trend. Two down-sloping trendlines outline price action that broadens out. Volume usually increases over time.

As you look at the chart, you may make an interesting observation. The price trend has three stages: The first stage is the long bull-run to August 1995, leading to a 2-month retrace (second stage), and then price moves higher (third stage). I show those stages in the figure by arrows.

This broadening formation acts as part of a consolidation or retrace of the upward primary trend. Price enters the pattern from below and exits out the top. Taken as a whole, it looks like the corrective phase of a measured move up chart pattern.

Contrast Figure 13.1 with **Figure 13.2**, where a descending broadening wedge acts as a reversal of the intermediate-term price trend. Price peaks in May 1992 and heads lower. During August, price begins to broaden out as the stock continues its downward spiral. By mid-September, a descending broadening wedge has formed.

Volume is low at the start of the wedge but does have a few spikes. Into September, volume moves up and becomes even more irregular. At the start of October, as price begins rising, volume recedes. Price pierces the top trendline on negligible volume and heads higher. A trend reversal from down to up occurs.

Identification Guidelines

Table 13.1 outlines identification guidelines for the wedge, and Figure 13.3 shows another example of a descending broadening wedge.

Appearance. Minor highs align themselves like magnets to iron along the top trendline. The trendline slopes downward. Minor lows follow a down-sloping trendline along the bottom. Together, the pattern looks like a megaphone tilted down.

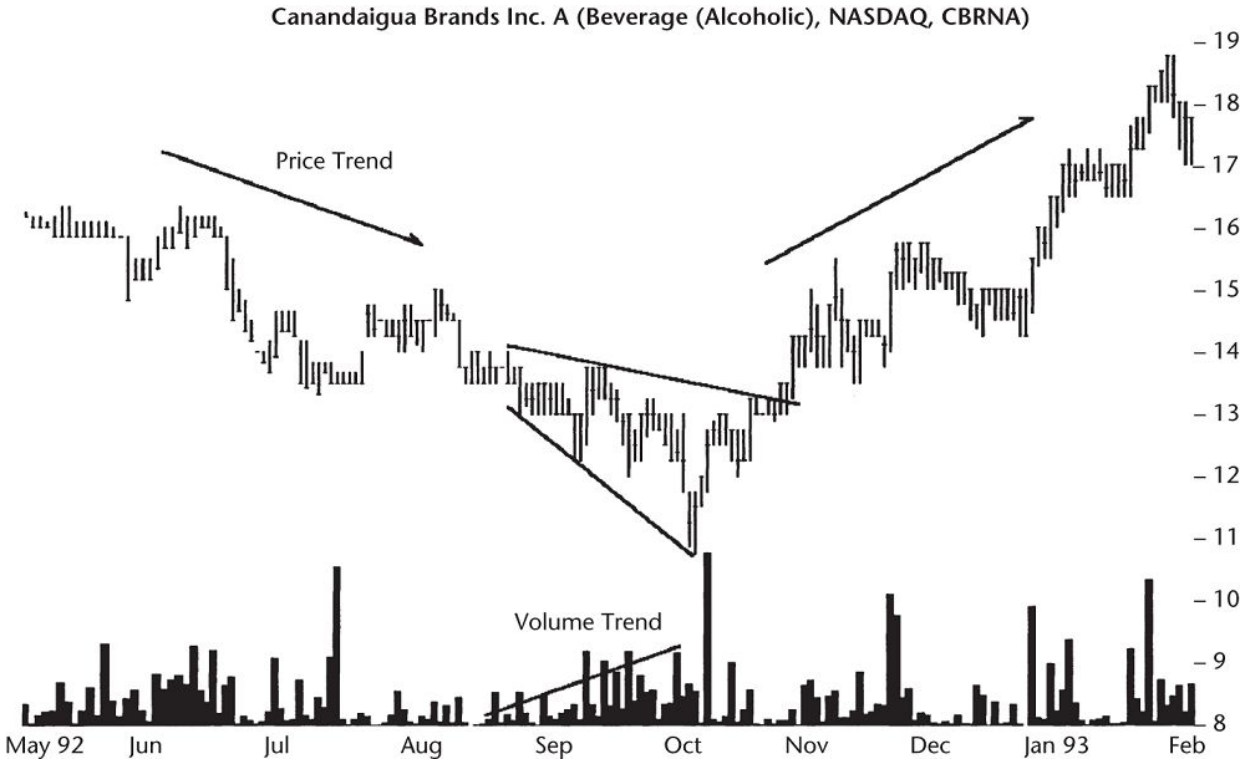


Figure 13.2 This descending broadening wedge acts as a reversal of the intermediate-term downward trend.

Table 13.1 Identification Guidelines

Characteristic	Discussion
Appearance	The formation looks like a megaphone tilted down.
Trendlines	Both trendlines slope downward, with the lower trendline having a steeper slope. Thus, the two lines diverge.
Touches	Wedges require at least five touches, three of one trendline and two of the other with each touch being a minor high or minor low. If price cuts through a trendline, then it doesn't count as a touch.
Whitespace	Select patterns where price crosses the wedge from top to bottom frequently, filling the whitespace.
Volume	Usually rises over the length of the wedge. However, don't discard a pattern because it has an unusual volume trend.
Breakout direction	Can be in any direction but breaks out upward most often.

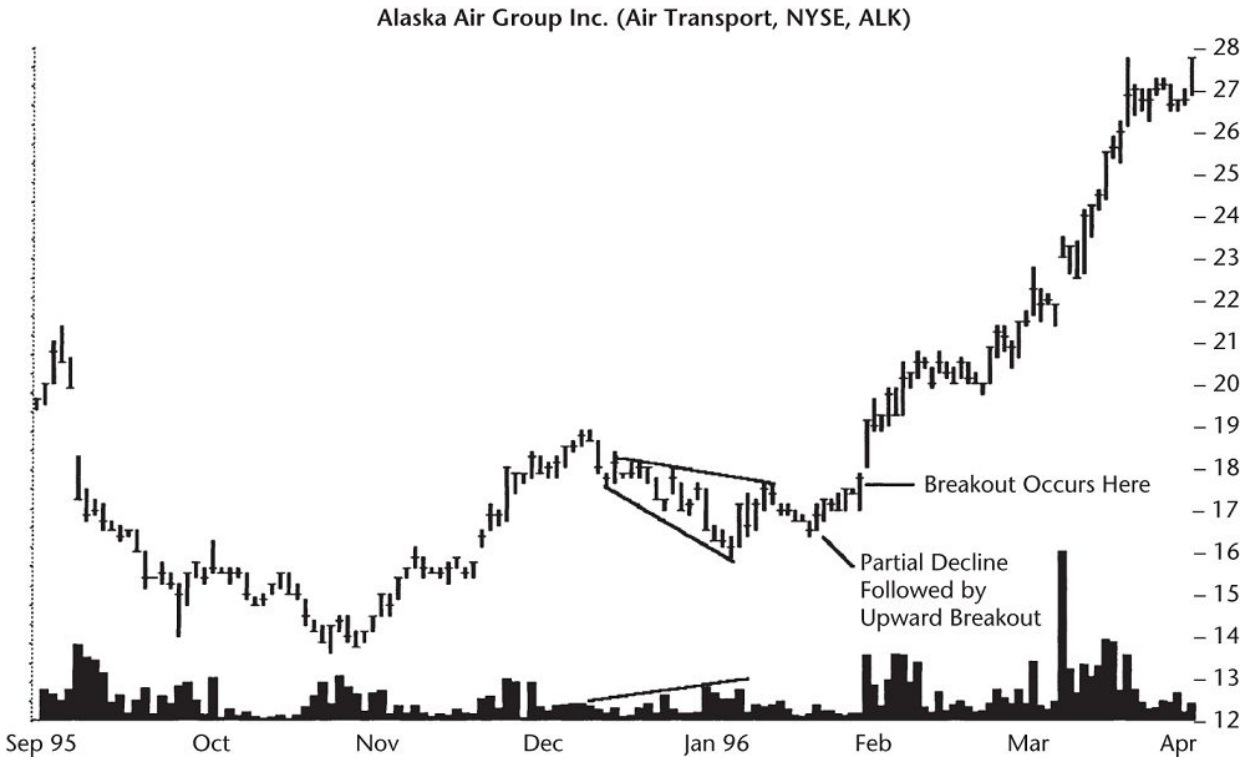


Figure 13.3 This descending broadening wedge is a consolidation pattern in a rising trend. Volume increases even as price heads down. A partial decline signals that an upward breakout is coming.

Trendlines. The figure shows two down-sloping trendlines that encompass a series of oscillating waves. The oscillations become more violent, swinging up and down in wider and wider arcs, leaving behind diverging trendlines.

Touches. Each valid trendline touch should be a minor high or a minor low, or it won't count as a touch. That means a touch does not count at the start or end of the pattern if price straddles the trendline (if no minor high or low appears there). Look for at least five touches, three on one trendline and two on the other, but they need not alternate. Use the figures in this chapter as guidance.

Whitespace. Price should cross the pattern from top to bottom so that it covers the whitespace with movement. Too much whitespace in a pattern means you've probably made an identification mistake.

Volume. The volume trend is upward two-thirds of the time in descending broadening wedges. Increasing volume seems to catapult price higher, sending it out the top of the wedge. Volume at the

breakout is usually high but need not be. As long as demand exceeds supply, price will rise. If volume recedes, don't discard the pattern.

Breakout direction. The breakout direction is upward 72% of the time. All of the figures in this chapter show an upward breakout. A downward breakout would occur when price closes below the bottom trendline.

Focus on Failures

Look at **Figure 13.4**. In the week or two before the wedge begins, price is rising. Immediately after the breakout, price is also rising, so this wedge acts as a continuation of the upward price trend.

The breakout process starts on 3 September when price punches through the top trendline and closes above it. However, price does not rise far before returning to the trendline.

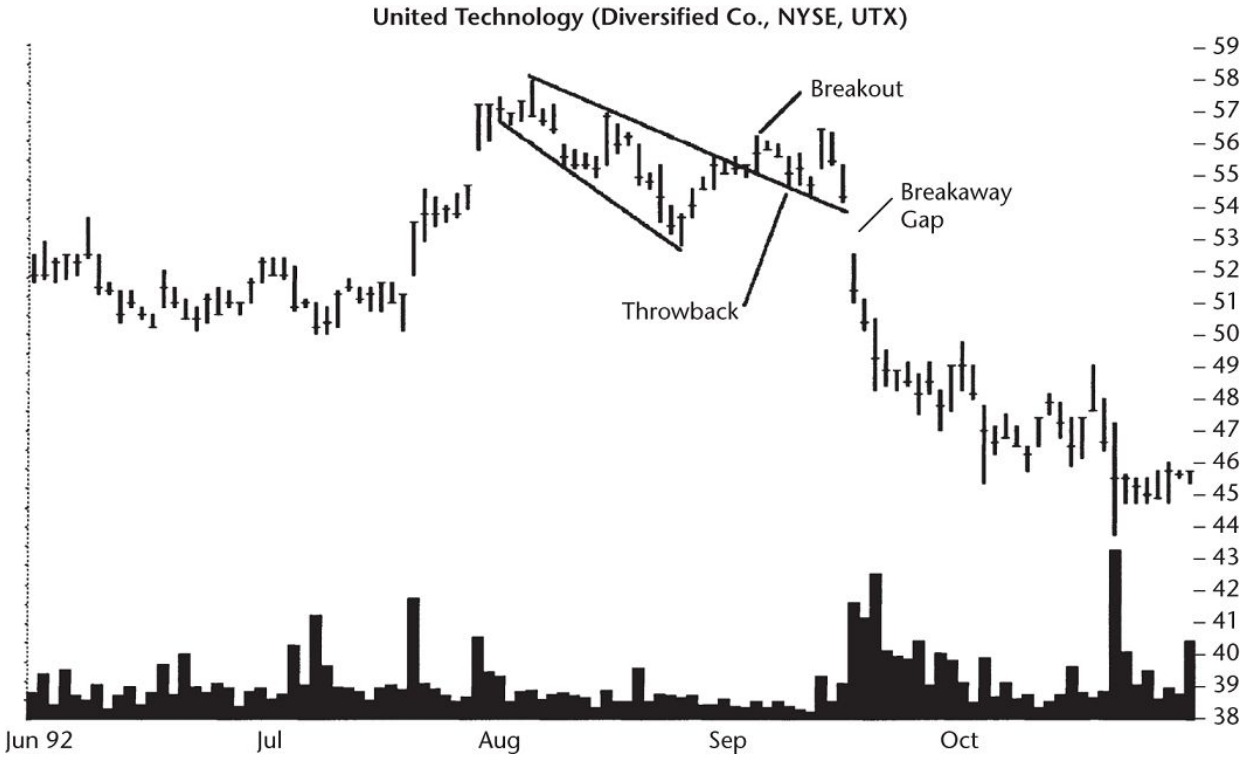


Figure 13.4 This wedge is a failure according to the 5% rule. Price fails to move up from the breakout by more than 5% before collapsing.

I have extended the top trendline in the Figure to highlight the throwback. You see that price rides along the top trendline, following it lower until it gaps down (a breakaway gap) on 17 September.

This wedge is an example of what I call a 5% failure, that is, when price breaks out and moves no more than 5% before reversing. This type of failure is common, happening between 18% (upward breakouts) and 35% (downward breakouts) of the time.

Why these failures occur is unclear. Sometimes nearby overhead resistance to an upward breakout or underlying support to a downward thrust will repulse price and cause a failure. Traders change their minds about a stock and bolt for the exits, causing price to move in an unexpected direction.

If the general market makes a sudden move, such as a large drop, it'll suck the life out of upward breakouts. If news comes out that oil prices have spiked, the industry may suffer and that pain gets reflected in the stock. And of course, if a cherished CEO gets caught with his hands in the cash register, that may cause problems, too. General market, industry, and stock trends all play their part in causing a 5% failure.

Statistics

Table 13.2 shows general statistics for the descending broadening wedge.

Number found. I sifted through my databases searching for this pattern and found 1,011 from July 1991 to June 2018 in 565 stocks. This is not an easy pattern to find, and it's rare enough that I removed the bear market patterns because I found too few. Not all stocks covered the entire period and some no longer trade.

Looking at the numbers, you can see that upward breakouts happen most often.

Reversal (R), continuation (C) occurrence. The table shows that upward breakouts act as reversals most often and downward breakouts act as continuations. However, the numbers are close to random.

Table 13.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	542	215
Reversal (R), continuation (C) occurrence	58% R, 42% C	44% R, 56% C
Reversal, continuation performance	38% R, 42% C	–13% R, –13% C
Average rise or decline	39%	–13%
Standard & Poor's 500 change	12%	–3%
Days to ultimate high or low	218	54
How many change trend?	55%	21%

Reversal/continuation performance. I sorted wedges by behavior (reversals and continuations) and checked performance for each. Downward breakouts show no performance difference, but upward breakouts give a slight edge to continuations for better performance.

Average rise or decline. Both the average rise and average decline are below what we see for other chart pattern types, so this chart pattern is not one you'll want to brag about. However, the next table will discuss failure rates, so perhaps we should wait before passing judgment.

Standard & Poor's 500 change. I computed the change in the S&P index using the dates when the wedge broke out and reached the ultimate high or low. As the table shows, the index didn't perform as well as the wedges. You might also consider that the general market helped wedge performance (a rising tide lifts all boats type thing).

Days to ultimate high or low. I compared the 39% rise in 218 days to the 13% decline in 54 days. If the velocity of the two moves were the same, the downward move should have taken 73 days. It completed the move in 54 days. In other words, the downward move is about 50% faster than the upward one.

How many change trend? This is a measure of how many wedges see price move more than 20% after the breakout. I consider values above 50% to be respectable. Upward breakouts tie the 55% average for all chart pattern types, so that's good.

Downward breakouts in bull markets struggle. The average for all chart pattern types is 28%, so wedges fall well short of that value.

Table 13.3 shows failure rates for this pattern. I counted how many patterns failed to reach a value, such as 5%. I found that 18% of patterns with upward breakouts and 35% of wedges with downward breakouts failed to see price move more than 5% after the breakout. Half (51%) couldn't jump a 25% hurdle (upward breakouts). Downward breakouts were worse with the hurdle set at 10% and seeing 55% fail to clear it.

Table 13.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	97 or 18%	75 or 35%
10	61 or 29%	43 or 55%
15	47 or 38%	33 or 70%
20	38 or 45%	18 or 79%
25	36 or 51%	8 or 82%
30	29 or 57%	13 or 88%
35	30 or 62%	9 or 93%
50	61 or 74%	8 or 96%
75	66 or 86%	7 or 100%
Over 75	77 or 100%	1 or 100%

As you look down the rows of this table, the failure rates climb to high values quite quickly. Combined with a mediocre average rise or decline, the pattern's overall performance doesn't bode well for traders using it to make money.

Here's how this table is useful. Suppose you have a wedge in a bull market and an upward breakout. The measure rule says to expect a rise of 10 points to the top of the pattern from the current $40 price. That's a 25% rise.

According to the table, how many wedges will fail to see price rise more than 25%? Answer: 51%. So half the patterns will fail. It might make you rethink your expectation of a large rise.

Table 13.4 shows breakout-related statistics.

Breakout direction. Most descending broadening wedges break out upward, as the table shows.

Yearly position, performance. Mapping performance over where the breakout price appears in the yearly price range, we find that the pattern performs best if the breakout is within a third of the yearly low. In second place is the highest third. You'll want to avoid trading

patterns in the middle of the yearly high–low range (they perform worst).

Throwbacks and pullbacks. Downward breakouts show a return to the breakout price a bit more frequently than do patterns with upward breakouts. When a throwback or pullback occurs, it takes about 12 days, on average, to complete the return to the breakout price.

Table 13.4 Breakout and Post Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	72% up	28% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 44%, M 34%, H 42%	L –15%, M –11%, H –13%
Throwbacks/pullbacks occurrence	62%	64%
Average time to throwback/pullback peaks	4% in 6 days	–5% in 5 days
Average time to throwback/pullback ends	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	39%	–12%
Average rise/decline for patterns without throwbacks/pullbacks	39%	–15%
Percentage price resumes trend	77%	54%
Performance with breakout day gap	34%	16%
Performance without breakout day gap	41%	12%
Average gap size	$0.53	$1.16

In other chart pattern types, we see performance suffer when a throwback or pullback happens. I think it's because the curl robs momentum and traders become too shy to trade it after the throwback or pullback completes. For descending wedges, we see downward breakouts exhibit this performance improvement but not upward breakouts.

After a throwback completes, the stock returns to trending upward 77% of the time. Downward breakouts show price resuming their decline 54% of the time. That's about random.

Gaps. Common trading lore says a breakout day gap helps performance. With wedges, it's a mixed bag. Gaps help after a downward breakout but not after an upward one. Notice that the gap size is twice as large after a downward breakout. The size of the gap might be related to downward moves having higher velocity than upward ones, but that's a guess.

Table 13.5 shows pattern size statistics.

Height. Tall patterns outperform short ones for both breakout directions. In fact, height is the best predictor of future performance. Unfortunately, because we're dealing with probabilities, we can't say for sure if a tall wedge you're considering trading will outperform a short one, but on average, tall ones perform better.

To determine if a wedge is tall, compute the height from the highest price at the pattern's start to the lowest one at the pattern's end. Divide the height by the breakout price (the price where the stock closes above or below one of the trendlines). If the result is higher than that shown in the table for the respective breakout direction, then you have a tall pattern.

Width. Wide patterns generally perform better than narrow ones and that's what we see here. I measured the width of each pattern from start to end in calendar days (not price bars) and compared the result to the median width shown in the table.

Table 13.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	44%	–16%
Short pattern performance	35%	–11%
Median height as a percentage of breakout price	15.9%	13.8%
Narrow pattern performance	38%	–11%
Wide pattern performance	41%	–15%
Median width	50 days	40 days
Short and narrow performance	34%	–10%
Short and wide performance	36%	–13%
Tall and wide performance	44%	–16%
Tall and narrow performance	44%	–15%

Table 13.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	66% up	66% up
Rising volume trend performance	36%	–14%
Falling volume trend performance	46%	–12%
Heavy breakout volume performance	42%	–13%
Light breakout volume performance	35%	–12%

Height and width combinations. Combining the traits of height and width, we find that tall patterns beat the other combinations. If you select a tall pattern, performance doesn't change much if it's wide or narrow, but I'd opt to trade wide patterns anyway. Remember your pattern might not live up to the average, so pick tall and wide patterns for the best potential performance.

Table 13.6 shows volume-related statistics.

Volume trend. Does a rising or falling volume trend over the life of the chart pattern suggest better or worse performance after the breakout? Before I answer that, we see that volume trends upward 66% of the time in the descending broadening wedge.

Rising/Falling volume. Performance of wedges is mixed depending on the breakout direction. That inconsistency bothers me. Upward breakouts show better performance if volume was trending down in the pattern. Downward breakouts show the reverse with a rising volume trend (within the pattern, from start to end of it) pushing price higher after the breakout.

Breakout day volume. Wedges with breakout day volume heavier than the prior month's average show better performance after the breakout. The result matches common trading lore.

I left off **Table 13.7** (how often stops hit) because the method to calculate stops doesn't apply to the shape of this pattern.

Table 13.8 shows the average performance over three decades.

Performance over time. Upward breakouts show the best performance happened in the 2000s, and downward breakouts performed worse then. That might be because the 2000s had a whopper of a bull market run in technology stocks. Upward breakouts would be pulled along, and downward breakouts would fight a rising tide. The two bear markets in the 2000s were excluded from the numbers.

Failures over time. Upward breakouts show failures climbing from the 1990s to the 2010s. Downward breakouts suffered in the 2010s with almost half of wedges failing to see price drop more than 5% after the breakout. That's startlingly bad, and I'm a writer who doesn't like using adverbs.

Table 13.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	38%	–16%
2000s	42%	–11%
2010s	38%	–13%
Performance (above), Failures (below)		
1990s	14%	27%
2000s	19%	43%
2010s	21%	34%

Table 13.9 shows busted pattern performance. If you're unfamiliar with busted patterns, consult the Glossary (“Busted pattern”).

Busted patterns count. Downward breakouts bust twice as often as do upward breakouts.

Busted occurrence. I sorted busted patterns into three types (single, double, and more than twice). Single busted patterns happen most often, which is a blessing because they also perform best. Actually, I didn't measure the individual performance of the other two, so I'm guessing.

Busted and non-busted performance. I wanted to know if a busted pattern performs better than a non-busted one, so I compared them. In other pattern types, the results are closer than I expected except for single busted patterns. They nearly always beat the non-busted pattern performance. We see that trend in this table, too, for wedges. It's especially true after a downward busted pattern. Single busted patterns soar an average of 65% compared to a rise of just 39% for non-busted patterns. That's a huge difference.

There is a catch. The pattern has to single bust and not double or triple+ bust. Unfortunately, I haven't found a way to determine if a pattern will single, double, or triple+ bust.

Table 13.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	116 or 21%	100 or 47%
Single bust count	61 or 53%	75 or 75%
Double bust count	36 or 31%	3 or 3%
Triple+ bust count	19 or 16%	22 or 22%
Performance for all busted patterns	–14%	50%
Single busted performance	–22%	65%
Non-busted performance	–13%	39%

Comparing non-busted patterns to all varieties of busted patterns (single, double, triple+), we find that busted patterns outperform non-busted ones. Yippee!

If you see a descending broadening wedge with a busted downward breakout, then consider trading it after price closes above the top of the pattern. Ride price higher.

Trading Tactics

Table 13.10 shows trading tactics.

Measure rule, targets. For upward breakouts, the price target is the top of the pattern. That sounds like it would be easy to reach, and it is for 83% of the patterns. That means 17% never make it up that far before seeing a substantial drop.

The bottom portion of the table shows how effective it is to use the pattern's height applied to the breakout price. If you use half the pattern's height added to the top of the pattern, price will reach it 65% of the time after an upward breakout.

Table 13.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	For upward breakouts, use the highest high in the wedge as the target. For downward breakouts, use the pattern height subtracted from the lowest low in the pattern. The bottom portion of the table shows how often this works for both breakout directions (for upward breakouts, add the height to the highest high in the pattern).
Partial rise and decline	If a stock shows a partial decline from the top trendline and begins to head back up, consider going long. A partial decline correctly predicts an upward breakout 79% of the time. A partial rise works just 36% of the time to correctly predict a downward breakout. Don't rely on partial rises.
Busted trade	See Table 13.9. Consider trading a wedge after it busts a downward breakout.

Description	Up Breakout	Down Breakout
Pattern top	83%	N/A
Percentage reaching half height target	65%	52%
Percentage reaching full height target	52%	32%
Percentage reaching 2× height	35%	13%
Percentage reaching 3× height	25%	6%

Subtract the half-height from the bottom of the pattern and just over half of the wedges with downward breakouts will reach the target. Ignore values below zero and change the decline (or rise) into a percent so you're not expecting a huge move.

Table 13.3 can help you decide if the potential move to the target is realistic. For example, if the target is $5 below the bottom of the wedge with the current price of 30, that's a decline of 5/30 or 17%. Table 13.3 says that 70% of wedges will fail to see price drop more

than 15% (the closest value to 17%). In other words, price probably won't make it that far down, but your situation may be different.

Partial rises and declines. Figure 13.3 shows an example of a partial decline. Price touches the top trendline, then heads toward the lower trendline, curls around, and stages an immediate upward breakout.

In bull markets, a partial decline correctly predicts an upward breakout 79% of the time. Partial rises do not work as well: Only 36% correctly predict a downward breakout. I wouldn't rely on partial rises.

Busted trade. Downward breakouts that bust outperform their non-busted counterparts, so consider looking for a busted downward breakout. That means waiting for price to bust the downward breakout and going long after the stock closes above the top of the wedge (not the top of the upper trendline).

Avoid patterns with nearby overhead resistance. Because this chart pattern has poor performance, trade only when the stock, industry, and market are trending upward. That way, you are more likely to find a single busted pattern. And those blow the doors off performance. Not sure what that means, but it sounds way cool.

Experience

Let me tell you about what I found in my trade review.

D.R. Horton Inc.

Some trades get away from you like the one in D.R. Horton Inc. (DHI). In December 2006, the stock made a descending broadening wedge. It was small, but tight, with lots of trendline touches and with the stock bouncing from top to bottom, just like you'd expect to see in a well-formed wedge.

I made the perfect entry, buying into the stock two days after the breakout. I could have bought a day sooner and received a better fill, but I snagged the opening price of 27.32 and was happy about that.

From my trading notebook: “18 January 2007. This co's stock is doing twice as well as KBH [KB Home] and I'm flush with cash. It broke out upward from a descending broadening wedge, so call that the buy signal.”

For a time, the stock cooperated. It did a measured move up type stair-step rise and peaked at 31.13, a gain of 14% above my buy price.

Then the tide left the station, to mix metaphors. Price made a measured move down, stair-step pattern, mirroring the upward move except sinking. The pause in the middle of the pattern was right where it paused on the way up, showing a very pretty mirror of the left side.

The stock continued a near straight-line run down to 22.02 (for a potential loss of 19%). In mid-March, I wrote this in my notebook: “This has completed a downward move, from what I can see. The sharp up move starting 10 November 2006 has been reversed. Review of stock charts says that when a decline (not necessarily a quick one) follows a quick rise, price begins rising again, recovering the loss and then some. This looks to me to have completed the reversal, even though the fundamentals suggest a bumpy road ahead.”

Buried in my notes was the trap. Did you find it? “...price begins rising again, recovering the loss and then some.” I did my research and concluded the stock would rise. All I had to do was wait and I'd be rewarded.

The stock moved sideways for 3 months. No big deal. I don't mind waiting for my trades to work.

The stock dropped again in another straight-line run down. *Uh-oh*.

I threw in the towel on 27 June 2007. From my notebook: “Sell reason: This looks like it's about to fall off a cliff, and it dropped below a double bottom low from April. Price will continue down, so I'm selling…”

The double bottom in April looks more like a head-and-shoulders bottom that started in March. I lost 26% on the trade. Yes, you can laugh now. Wait until it happens to you.

Did the stock fall off a cliff? Yes it did. It dropped to 10.15, a decline of 49% below the 20 where I sold.

- Lesson: Plan the trade and trade the plan.

Plan? What plan? I didn't flush out this trade before I entered it. For a few weeks, it looked as if the trade might work out well. But then the trend reversed. It appears this was a buy-and-hold mistake, not a planned swing or position trade. So I was willing to give the stock room to grow (or shrink, in this case). Even after the stock dropped back to 22, it looked like that would be the end of the decline because it was resting on support. Indeed, the stock moved sideways for 3 months.

When the stock fell through the ice supporting it, I sold. Perfect entry, but a very late exit.

Texas Industries

I don't know if it was too soon to realize we had entered a bear market on 3 August 2000 (which started on 24 March 2000), but sometimes stocks like to go their own way.

Texas Industries (TXI) formed a large and loose-looking descending wedge. The day after it broke out upward, I was there with a fist full of bucks. I bought, so it was the perfect entry.

From my notebook: “Reasons for purchase: It has made an upside breakout, on weak volume, from a descending broadening formation.

The Fed [Federal Reserve] is going to impose antidumping penalties as high as 95.29% on imports of certain types of coated-steel sheet. This may help the co. After reviewing stats in [this] Encyclopedia book for broadening wedge, descending, it looked like a good trade. Upside is 36, downside is 30, evenly split from 33. I think this will continue moving higher, maybe to the old high at 43 3/8." I received a fill at 33.06.

The stock eased a bit lower as if it were making a flag pattern. The drift down wasn't much, but it lasted over a week. Then the stock took off. In 3 days it was just 6 cents below 35. And then the stock dropped like a stone all the way down to 20.88, a decline of 40%, bottoming in November.

Fortunately, I pulled a rabbit out of my hat and on 23 August, I sold the stock for a profit. From my notebook: "I sold around 33 9/16. I think the stock is heading down as it is following the others moving down. All are off their peaks by 1 1/2 to 2 1/2 points, and I don't see a turnaround."

I made 1% on the trade on a position about half the normal size.

Lesson? I'm not sure there is one. I made a perfect entry but a late exit. The stock rounded over at the peak and then started heading lower with gusto. I sold quickly for a profit and avoided taking a 40% loss.

Sample Trade

“Do you feel lucky, punk?” Mary asks as she looks at her computer screen (**Figure 13.5**). She just finished watching a *Dirty Harry* movie and is feeling ornery.

She decides to buy the stock when price rebounds off the lower trendline. When it is clear the stock is climbing again, she pulls the trigger and receives a fill at 43. Immediately, she places a stop-loss order 15 cents below the lower trendline, at a price of 42. If things go wrong, she only will lose 3%. Then she waits.

The stock cooperates by moving higher each day. Soon it is at the top trendline, and she waits for it to ricochet off the line and begin heading down.

It doesn't. Instead, price closes above the top trendline, signaling an upward breakout. She calculates the price target, 49.63, using the formation height added to the breakout price, and that is where she places her sell order. “I'm hoping the target is a minimum price move, but it seems a long way away. It might be a maximum.”

She raises her stop-loss point to 44, slightly below the minor low in mid-April.

As the stock advances each day, she keeps wondering why it has not paused. She shrugs and does not worry about it. When the stock makes a new high at 47.38, she raises her stop to 45.25, slightly below the two minor highs in late April and mid-May.

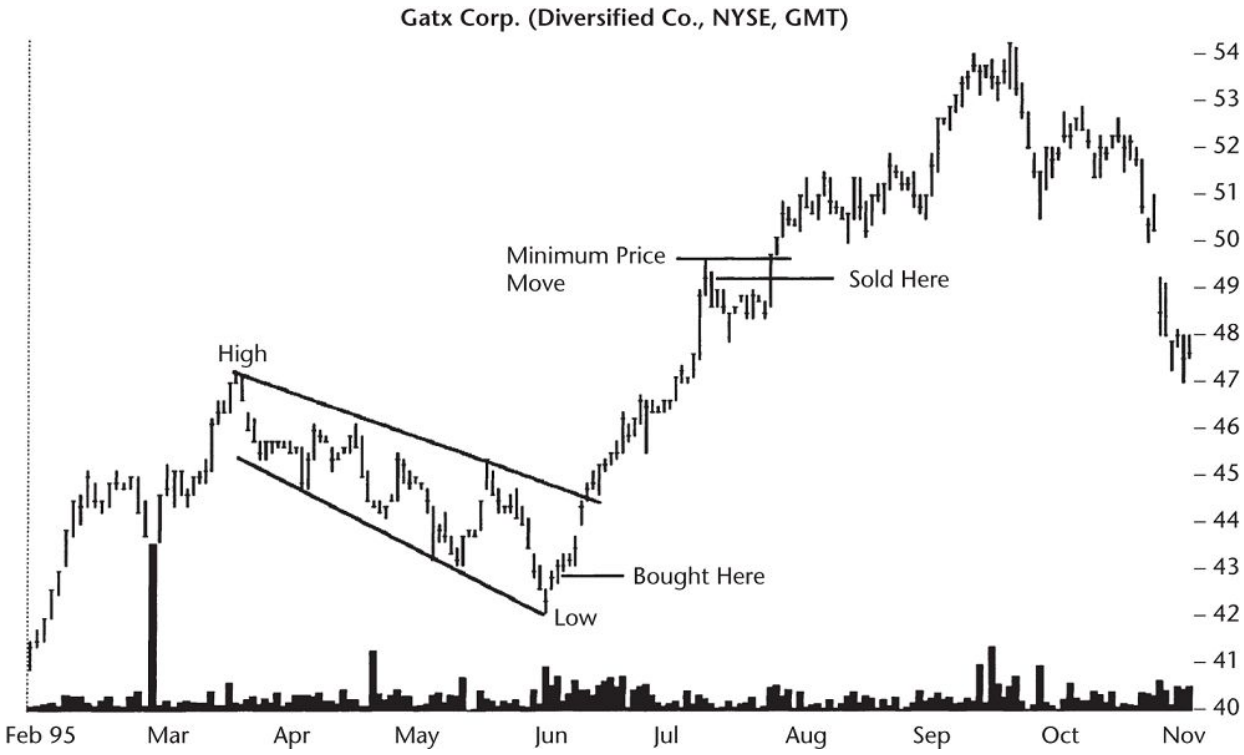


Figure 13.5 As described in the Sample Trade, Mary used the wedge's height projected upward as a price target.

In a burst of energy, the stock zooms up over a 2-day period and reaches her sell target. The stock sells at the high for the day, 49.63. She has cleared over $6 a share on her trade. Even better, the stock moves lower for several days, reinforcing her sell decision as being the correct one.

She sold too soon, but she doesn't care. She spots another promising pattern in a stock she has been following for quite some time. She leans back in her chair, smiles and mumbles something about luck, then runs to the DVD player and plugs in another *Dirty Harry* movie.

I talked to her about the trade.

“On the entry, the stock could have continued lower,” she told me, “but happened to turn upward at the bottom trendline. It was a risky entry. Balancing that was a well-formed wedge.”

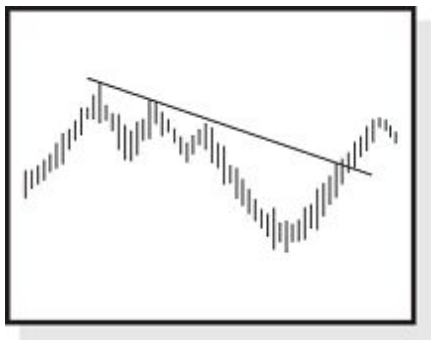
The wedge had several trendline touches and looked long enough to be ready to break out upward.

“I entered just as the stock made a straight-line run higher. It could have paused along the way and dropped far enough to hit my stop,

especially when the stock moved to the top of the wedge."

For a swing trade, I've found that setting a sell order at the price target like she did can get you out of the trade right at or near the high. The stock may continue to trend higher as in this case, but you may be surprised how often the sell order works better than other exit methods.

14
Bump-and-Run Reversal, Bottom



RESULTS SNAPSHOT

Appearance: Looks like a frying pan with the handle on the left following a trendline down until a large decline ensues. The right side of the pan sees price recover and break out upward.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Intermediate-term bullish reversal
Performance rank	1 (best) out of 39	2 out of 20
Breakeven failure rate	9%	10%
Average rise	55%	35%
Volume trend	Upward	Upward
Throwbacks	61%	69%
Percentage meeting price target	76%	64%

More than a year after I discovered the bump-and-run reversal (BARR) top, I decided to look for its complement: the BARR bottom. The reason was simple. Many chart patterns, such as double tops, ascending triangles, and triple tops, have bottom versions. Why not the bump-and-run reversal? It never dawned on me to look for the pattern before then.

As I searched through the data looking for candidates, I was skeptical that the pattern added real value. Some looked like cup-with-handles with the handle coming first, whereas others looked like rounding bottoms. Only after I compiled the statistics did my thoughts change.

The pattern is a strong performer with gains averaging between 35% and 55%, placing the first and second in the performance rank for bull and bear markets. The breakeven failure rate is small, too, coming in at 10% or less.

Grab your magnifying glass and let's look closer at this pattern.

Tour

What is a bump-and-run reversal, anyway? If I had to name this formation independent of all others, I would probably call it the frying pan or spoon because that is what it looks like. However, the formation is just a BARR top flipped upside down, so I call it a BARR bottom. I guess a more accurate description is an inverted BARR.

Why do BARR bottoms occur? Like the top version, the BARR bottom is a study of momentum. Consider the chart shown in **Figure 14.1** on the weekly scale. The last week of October 1993 initiated a long climb to the highs of early January 1994. On the highest volume that the stock had seen in years, the stock hit a new high of 14.38 during the week of 14 January. Volume began tapering off, although it was still high, and price tagged a much smaller peak during the week of 25 March, at 14. The two minor highs, one in mid-January and another in late March, formed the basis of a down-sloping trendline.

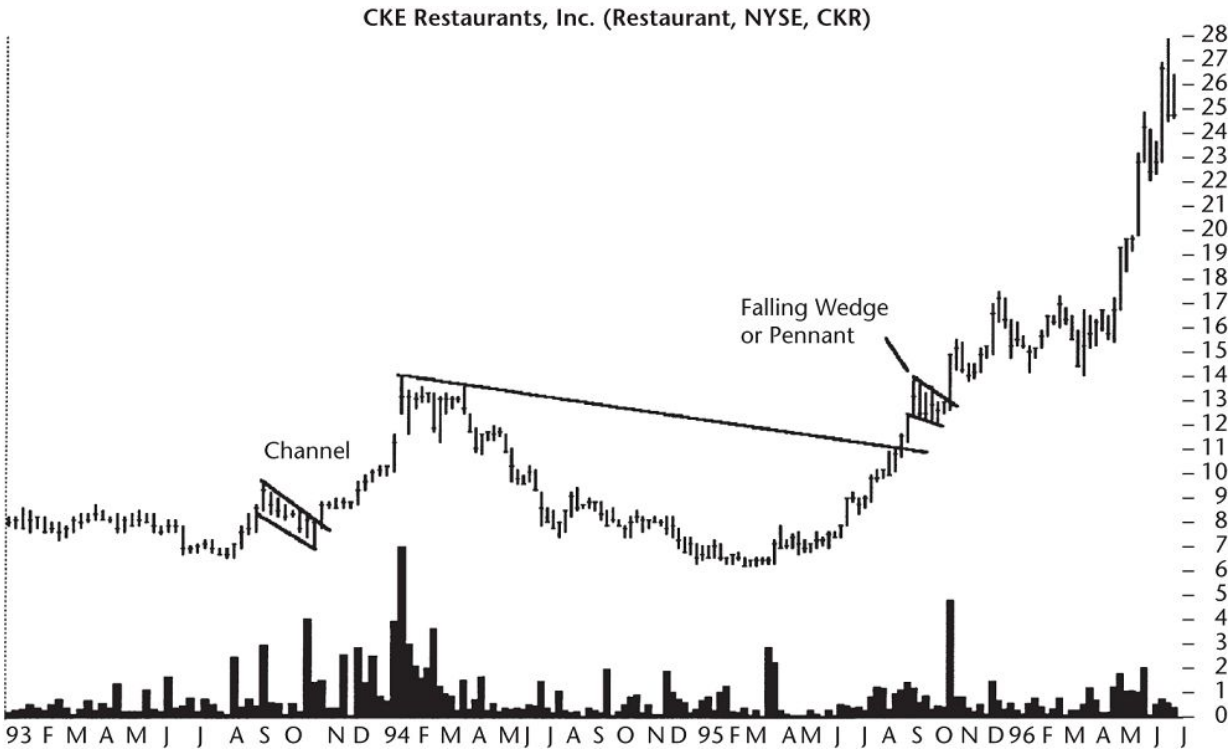


Figure 14.1 Upward momentum propels price higher during late 1993, then stalls at the start of the new year. Volume tapers off and price follows. A rounded bottom takes shape and price climbs 350% from the 1995 lows. A channel appears in late 1993 and a falling wedge in late 1995.

As weekly volume trended lower, so did enthusiasm for the stock. Eventually, bullish sentiment could not sustain the high price, and the stock collapsed. As it headed down, volume continued to taper off. The upward momentum experienced during the rise to the highs in January was now working against the stock. Over the course of a year, the stock gave back all of its gains, and by mid-February 1995, it started sinking to new lows.

High volume a month later was important because it signaled a turning point. A week later, again on high volume, the stock closed higher by over 10%. The upward move had begun but soon stalled out. The stock moved sideways for another 2 months, gathering strength for the uphill run. Then it took off, not jumping up, but slowly moving higher, almost week after week. When the stock reached the trendline in mid-August 1995, it was clear that it had

executed a massive rounding bottom—a turn in the trend that signaled higher price.

The stock pushed through the trendline on relatively high volume, then paused for a month and formed a falling wedge or pennant. Following that, on very high volume, price jumped up to new highs, but this did not last very long as the stock entered a consolidation phase below 18. There it stayed for many months before the stock jumped up and ran still higher. By late June 1996, the stock had touched 28.75, a rise of about 140% from the breakout, and 350% from the low.

Many might think this formation is a cup-with-handle, but it's too long (at 1 year and 9 months). It's a BARR bottom, because a cup does not depend on a down-sloping trendline and a larger handle on the left such as that shown in the Figure. Whatever you call the chart pattern, the result is still the same: Price moved higher.

Identification Guidelines

Table 14.1 shows a host of characteristics that correctly identify a BARR bottom. **Figure 14.2** illustrates the various characteristics outlined in the table.

Appearance. Overall, the chart pattern appears as a frying pan. The handle, or lead-in phase, forms a trendline that slopes downward at an angle of about 30 degrees to 45 degrees, more or less. Draw the trendline along the high price because the line signals a buying opportunity once pierced.

Unlike BARR tops, sometimes *horizontal* trendlines in the lead-in phase contain valid BARR bottoms. Such situations are rare, though, and should be avoided. The trendlines in this study are higher on the left and slope downward—these give the best performance.

Table 14.1 Identification Guidelines

Characteristic	Discussion
Appearance	The formation looks like a frying pan with the handle on the left sloping downward to the pan. After a deepening decline that takes price into the pan base, price levels out and eventually soars out the right side.
Arithmetic scale	Use the arithmetic chart, not a semilogarithmic one.
Down-sloping top trendline, lead-in height	The handle forms a down-sloping trendline that approximates 0–45 degrees (but this varies with scaling). The handle portion of the formation is called the *lead-in* because it leads into the bump phase. The lead-in height measures from the trendline drawn across the highs to the low (not necessarily the lowest low) of the formation. Select the tallest distance from the trendline to the low, measured vertically, in the first quarter of the formation. The duration of the lead-in should be at least a month, but varies depending on the situation.
Bump phase	The bump is analogous to the frying pan base. The down-sloping trendline deepens to 60 degrees or more. Price drops rapidly, then levels out and reverses, usually forming a rounded turn. After the turn, price moves up and sometimes pauses at the 30-degree trendline before moving higher. The bump height, as measured from the trendline to the lowest low, should be at least twice the lead-in height. Strict adherence to this rule is not required, but it serves as a good guideline.
Dual bumps	Twelve percent of the time, a BARR bottom has a second cup (bump).
Uphill run	Once price lifts out of the bump phase, it begins an uphill run that carries the stock higher.

Characteristic	Discussion
Volume	Volume is typically high during the three critical parts of the pattern: formation start, bump start, and upward breakout. However, high volume is not a prerequisite.
Breakout direction	Upward by definition, when price closes above the down-sloping trendline.
Confirmation	Price must break out upward, or else you don't have a BARR bottom.

Arithmetic scale. Use the arithmetic scale, not a semilogarithmic one, because the semilog scale distorts vertical distances.

Down-sloping top trendline, lead-in height. Calculate the lead-in height once a trendline forms. Do this by finding the widest distance from the trendline to the daily low, measured vertically, in the first quarter of the BARR.

In Figure 14.2, the lead-in height calculation uses price on 16 June (point A). On that day, the low is 17.63 and the trendline has a value of about 20.38. Thus, the lead-in height is the difference between these two, or 2.75. The minimum bump height uses the lead-in height, so the calculation is important.

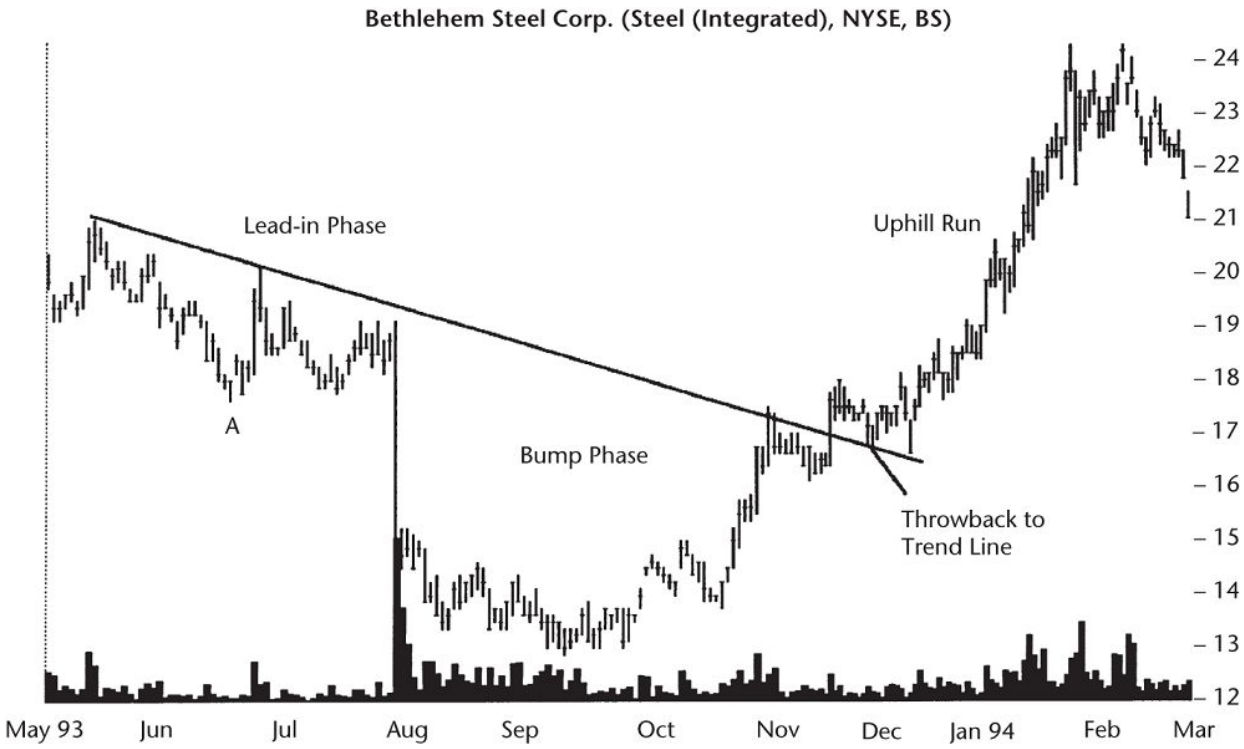


Figure 14.2 Shown are various components of a bump-and-run reversal bottom. The lead-in phase sees price moves in a narrow range. The bump forms, rounds upward as price leaves the bowl, and moves higher on the uphill run to new highs.

Bump phase. After the lead-in phase comes the bump phase. Price declines rapidly, although usually not as rapidly as that shown in Figure 14.2, and forms a new trendline that slopes down at about 45 degrees to 60 degrees or more. Volume is noticeably higher at the start of the bump, but selling pressure overtakes buying demand and the truth finally comes out: There are problems with the company. The stock continues down as the smart money and the momentum players leave the stock in droves.

Eventually, downward selling pressure abates, allowing the stock to recover. It rounds up and touches the original 30-degree trendline. Here, it may move lower for a while or it may sail right through the trendline. Over half of the time, price starts moving higher, then throws back to the trendline before continuing up.

Dual bumps. Price touches the trendline on its way to the breakout, but instead of continuing higher, it declines and forms a second bump. A second bump will appear 12% of the time in bull markets

and 11% of the time in bear markets. Oddly, patterns with dual bumps perform better. I'll mention that in Statistics coming later.

Uphill run, volume. Volume picks up as price breaks out of the BARR and price moves higher. Rising price characterizes the uphill run phase.

Breakout direction, confirmation. BARR bottoms always break out upward. If your pattern sees price close below the bottom of the pattern before closing above the down-sloping trendline, then it's not a valid pattern.

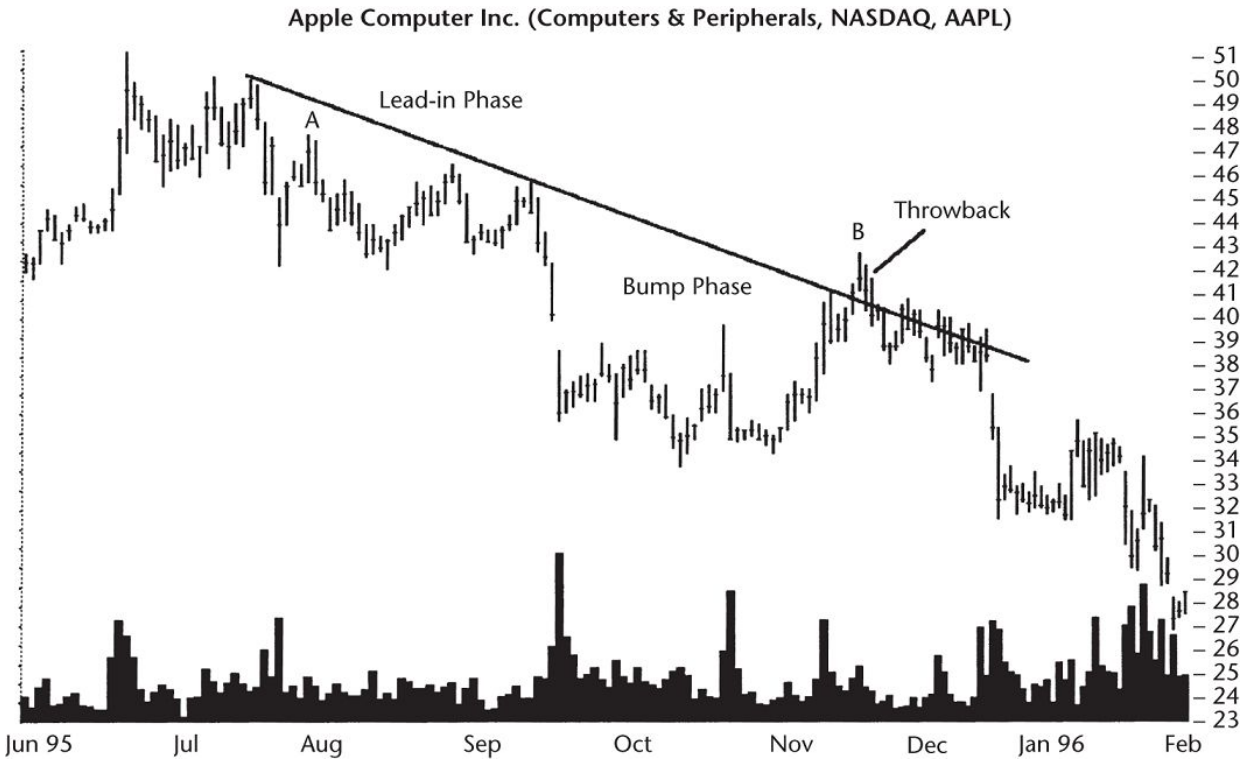


Figure 14.3 The bump height is less than twice the lead-in height, a clue that this pattern is not worth investing in. A trendline drawn from point A to B (not shown) satisfies the bump to lead-in height guideline. An investor waiting for price to move above the new trendline would not buy this stock.

Focus on Failures

Figure 14.3 shows what a BARR bottom failure looks like. Price reaches a new high for the year (the highest peak on the left). Then it is downhill from there. The decline is quite orderly with peaks that follow the trendline down. During early September, however, price drops rapidly on high volume as the bump forms. Price quickly reaches a low of 33.63 before rebounding.

Having sliced through the trendline and moving just a bit higher, price throws back and follows the trendline lower. Price following a trendline lower is not unusual, but what is unusual is that price does not continue its climb. Instead, it drops off the end of the trendline and plummets. By late June, the stock slips under $20 a share, less than half what it was at the high.

Why did the BARR fail? This formation is not a perfect example of a BARR bottom, but few patterns are. In this case, the bump height is less than twice the lead-in height. However, the height depends on how the trendline is drawn. Starting the pattern (drawing the trendline) from the peak at point A, the bump to lead-in height is about 2 to 1. The new trendline would also touch the peak at B. So, if you wait for price to move above the new trendline before investing, you would not purchase this stock. Sometimes it is wise to draw alternative views just to see how the chart pattern behaves.

In the example as I have drawn it, the stock fails because price does not rise more than 5% after the breakout. It's what I call a 5% failure.

Table 14.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,099	282
Reversal (R), continuation (C) occurrence	52% R, 48% C	67% R, 33% C
Reversal, continuation performance	52% R, 58% C	34% R, 36% C
Average rise	55%	35%
Dual bump average rise	61%	43%
Standard & Poor's 500 change	16%	1%
Days to ultimate high	326	124
How many change trend?	67%	59%

Statistics

Table 14.2 shows general statistics.

Number found. I found 1,381 patterns in 642 stocks from July 1991 to July 2018. Not all stocks covered the entire time, and some no longer trade.

Reversal (R), continuation (C) occurrence. The pattern acts as a reversal most often, but the numbers are close in bull markets, but much farther apart in bear markets.

Reversal/continuation performance. Patterns acting as continuations outperform those acting as reversals.

Average rise. The average rise is a strong 55% in bull markets and 35% in bear markets, handily beating the average rise of 42% and 28%, respectively, of other chart pattern types.

Dual bump average rise. I checked to see if patterns with dual bumps worked better than their non-bump counterparts. In bull markets, patterns with dual bumps saw price climb 61% versus 54% for those with only one bump. In bear markets, dual bump patterns saw price climb an average of 43% versus 34% for the non–dual bump variety.

Standard & Poor's 500 change. The index did well, but it surprises me that it was positive in bear markets. Keep in mind that the measurement periods use dates of the BARR's breakout to ultimate high. Apparently the index averaged a small gain during those periods in bear markets.

Days to ultimate high. To reach a gain of 55% in bull markets, it took almost a year. If the rise in bear markets happened at the same speed, it would take the average BARR pattern 207 days to climb 35%. In reality, it took just 124 days. That's not quite twice as fast, but it's close. Even though price is moving higher in both markets, bear markets show higher velocity than bull markets. This finding isn't related to BARRs. I've seen it in other chart patterns, too.

How many change trend? Here's where the pattern really shines. I consider values above 50% to be terrific. This pattern sees more than half of the patterns see price climb more than 20% (which is what's meant by a trend change) after the breakout.

Table 14.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	103 or 9%	29 or 10%
10	90 or 18%	37 or 23%
15	80 or 25%	30 or 34%
20	89 or 33%	22 or 42%
25	72 or 39%	34 or 54%
30	58 or 45%	25 or 63%
35	52 or 49%	14 or 68%
50	149 or 63%	36 or 80%
75	146 or 76%	32 or 92%
Over 75	260 or 100%	23 or 100%

Failure rates appear in **Table 14.3**, and they show good results. Few patterns flame out before climbing more than 5%—in bull markets 9% fail, and in bear markets 10% fail. That's low compared to many other chart patterns.

Look at what happens at the 10% rate, which asks how many patterns fail to see price rise more than 10% after an upward breakout? The numbers doubled from the prior row: 9% becomes 18% and 10% becomes 23%.

How do you use this table? Let me give you an example. Say your cost of trading is 5% and you want to make a 30% profit for a total of 35%. How many patterns will fail to rise more than 35%? Answer: 49% in bull markets and 68% in bear markets. Between half and two-thirds of the trades you make will fail to meet your goal. That means your winners will have to perform dramatically better to compensate for all the losers you should expect to have. That's if you trade the pattern perfectly and hundreds of times, too. You may trade the pattern better or worse.

Table 14.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is always upward. If you have a BARR bottom with a downward breakout, then it's not a BARR bottom. It's a mistake.

Yearly position, performance. Mapping performance over the yearly price range, we find that the best performing BARRs are those with breakouts near the yearly high. Those are the ones in which you want to trade. The closer the breakout price is to the yearly low, the worse the performance. This finding suggests BARR bottoms make for delicious momentum trades (avoid bottom fishing BARRs).

Throwbacks. Over half the patterns throw back. The stocks trend upward for about a week before returning to the breakout price in a roundtrip time of 11 to 13 days.

Table 14.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 51%, M 54%, H 60%	L 33%, M 35%, H 37%
Throwbacks occurrence	61%	69%
Average time to throwback peaks	5% in 7 days	6% in 6 days
Average time to throwback ends	13 days	11 days
Average rise for patterns with throwbacks	53%	32%
Average rise for patterns without throwbacks	58%	41%
Percentage price resumes trend	86%	77%
Performance with breakout day gap	57%	36%
Performance without breakout day gap	55%	34%
Average gap size	$0.37	$0.22
Number of dual bumps	12%	11%

As with many other chart pattern types, throwbacks hurts performance. After a throwback completes, the stock resumes the upward trend a good portion of the time (more than 77% of the time).

Gaps. Gaps help performance in both bull and bear markets. The performance difference is not high, so don't lose any sleep over it. However, because I use the opening price the day *after* the gap in the measure to the ultimate high, you don't need to own the stock before the gap to participate in the better performance.

Number of dual bumps. A second bump occurs about 11% to 12% of the time according to a study I conducted. **Figure 14.4** shows a good example of a multiple-bump BARR. The first bump completes in mid-August 1993 when price touches the down-sloping trendline. If you purchased the stock at any time during creation of the first bump, you would have been toast. From the high of 22.75 on 19 August, the stock declined to 17.38 on 1 October, nearly a 25% drop.

After that, it was all uphill. The stock moved up smartly and crested at 28.50 in mid-January 1994. From the bump low, that was a 64% move and a 33% rise from the breakout.

The figure imparts a valuable lesson: Consider waiting for the upward breakout before buying into a BARR. Not surprisingly, this lesson applies to many chart pattern types, not just the BARR bottom.

The dual bump is unusual in that the second bump bottoms lower than the first. As mentioned, dual bumps are rare. Of course, that is scant comfort if you already bought into a situation and price begins declining again during the second bump.

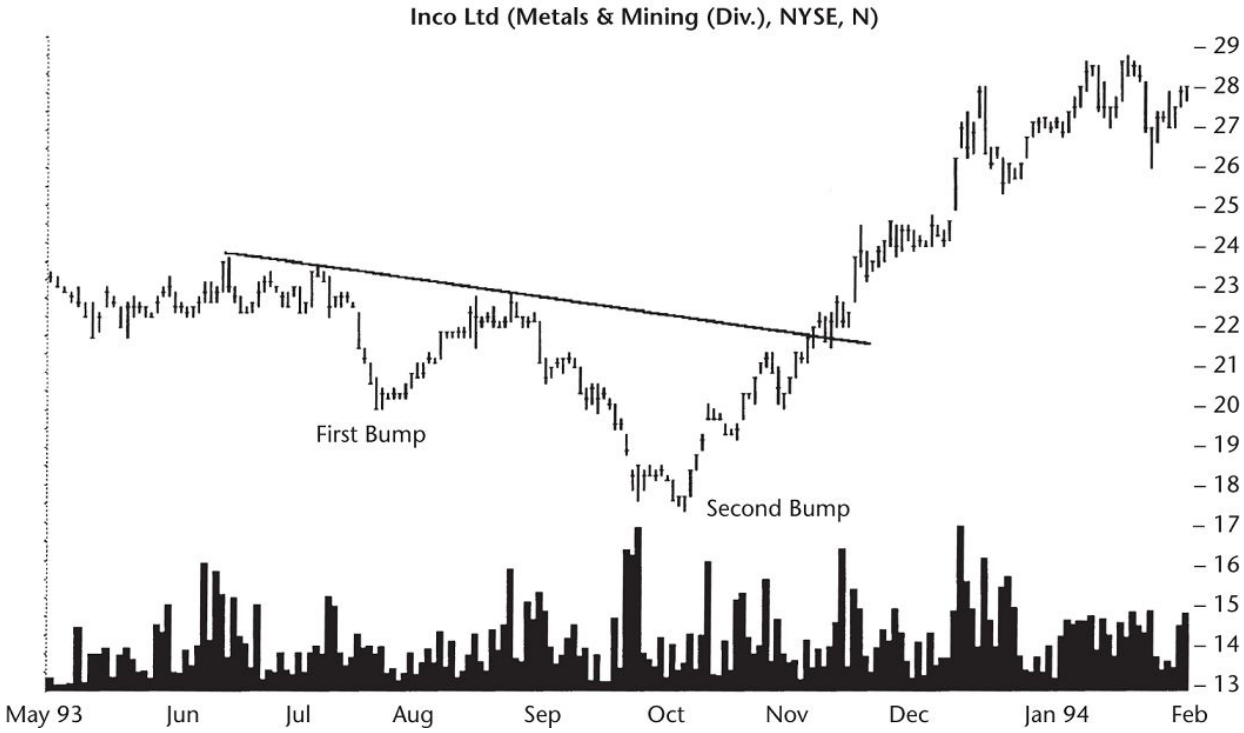


Figure 14.4 Consider waiting to buy the stock until after it breaks out upward. A trader buying into this situation during July would have lost money in the short term.

Table 14.5 shows size statistics for the BARR bottom pattern.

Height. Tall patterns perform better than short ones. To use this information, measure your pattern from the highest high to the lowest low and divide by the breakout price (where price closes above the down-sloping trendline).

Compare the result with the median in the table. If your value is higher than the median, then consider your pattern tall; lower than the median means it's short. Trade tall patterns for the best performance. However, also note that the performance difference between short and tall isn't great: three percentage points. So if the computation is too difficult for your fingers to handle and you don't want to use your toes, then ignore it. The stock will perform however it wants. Your challenge will be to get as much money out of the trade as possible.

Width. Wide patterns perform better than narrow ones, but only in bear markets. I used the median width as the separator between narrow and wide.

Height and width combinations. In bear markets, patterns both tall and wide should outperform, but they place second. Short and wide wins.

In both bull and bear markets, the worst performance comes from patterns that are short and narrow, so avoid trading those.

Table 14.6 shows volume-related statistics.

Volume trend. Volume trends upward about two-thirds of the time.

Rising/Falling volume. If volume recedes over the length of the BARR bottom, performance improves. I used linear regression to find the slope of the volume trend, but sometimes you can tell by using your eyes. Split the pattern in half and determine which half has higher volume.

Table 14.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	57%	36%
Short pattern performance	54%	33%
Median height as a percentage of breakout price	27.2%	39.7%
Narrow pattern performance	55%	30%
Wide pattern performance	55%	39%
Median width	100 days	92 days
Short and narrow performance	53%	28%
Short and wide performance	56%	43%
Tall and wide performance	55%	37%
Tall and narrow performance	61%	35%

Table 14.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	61% up	66% up
Rising volume trend performance	52%	34%
Falling volume trend performance	60%	36%
Heavy breakout volume performance	55%	36%
Light breakout volume performance	55%	34%

Breakout day volume. Heavy breakout volume only helps in bear markets.

Because of the way I measure stop-loss locations, **Table 14.7**, "How often stops hit," does not apply. You can look for it, but you won't find it hidden in this chapter.

Table 14.8 shows the performance of BARRs over three decades. I only show bull market statistics because both bear markets occurred in the 2000s.

Performance over time. Performance has improved over the years. Cool beans!

Failures over time. Recently, the failure rate has turned steady, at about 7%. Failures are a count of how many BARRs see price fail to rise more than 5% after the breakout.

Table 14.9 shows busted pattern performance.

Table 14.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	42%
2000s	63%
2010s	66%
Performance (above), Failures (below)	
1990s	13%
2000s	6%
2010s	7%

Table 14.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	128 or 12%	28 or 10%
Single bust count	76 or 59%	25 or 89%
Double bust count	41 or 32%	3 or 11%
Triple+ bust count	11 or 9%	0 or 0%
Performance for all busted patterns	–13%	–22%
Single busted performance	–19%	–25%
Non-busted performance	N/A	N/A

Busted patterns count. Comparatively few patterns bust because price after the breakout tends to keep going up.

Busted occurrence. I counted the types of busts: single, double, or three or more (triple+). Single busts happen most often followed by double and triple busts, in that order. This may sound odd, but sometimes triple+ busts happen more often than double busts.

Busted and non-busted performance. I don't have a non-busted BARR bottom with a downward breakout to compare to single and all-busted types. Single busted patterns outperform the combination of all three types of busts (including single busts).

Trading Tactics

Table 14.10 outlines trading tactics for BARR bottoms.

Measure rule. After properly identifying a BARR bottom, you will want to determine how profitable a trade is likely to be. You do that using the measure rule, but it's really a guideline, and it only tells how often price will climb to an arbitrary price.

Table 14.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The highest high in the pattern is the target. The bottom portion of the table shows how often the measure rule works. See text.
Wait for confirmation	Waiting for an upward breakout improves investment performance. The close should be above the down-sloping trendline before you buy the stock.
Sell at old high	When price rises to the old high, consider selling if the stock shows weakness.

Description	Bull Market	Bear Market
Pattern top	76%	64%
Percentage reaching half height target	57%	32%
Percentage reaching full height target	46%	17%
Percentage reaching 2× height	31%	7%
Percentage reaching 3× height	22%	4%

The highest high is the measure rule target, and price reaches the high 64% to 76% of the time. The lower portion of the table shows this (“Pattern top”). The remainder of the table shows how often price reaches a multiple of the height, from 0.5 to 3 times the pattern's height.

For example, in bull markets, price will reach the full height target (the pattern's height added to the top of the pattern) 46% of the time. Notice that I use the top of the pattern and not the breakout price in the computation.

As a sanity check, compute the rise to the target from the current price. Let's say it's $10 in a stock trading at 60. The height represents a 17% rise (10/60). Table 14.3 says that 25% of BARR bottoms will fail to see price rise at least 15% (the closes to 17%) in bull markets. That leaves 75% as winners, which is reasonable.

Wait for confirmation. Confirmation happens when price closes above the trendline formed during the lead-in phase. Should the price close above the trendline, buy the stock. Waiting for an upward breakout prevents a loss should the stock break out downward or form a second bump.

Sell at old high. Place a sell order near the price level of the old high (the price at the start of the BARR). That will keep your profits intact should the stock then turn down. If you are reluctant to sell your holdings, why not sell half when the stock reaches the old high, and then see what happens?

Figure 14.5 shows an example of the situation I'm writing about. Price began the BARR at 32.88 and then formed a descending triangle. (It's not a good triangle because it only has four trendline touches instead of five and too much whitespace. Where the bottom trendline cuts through price at the gap (at pattern start) doesn't count because it's not a minor low.)

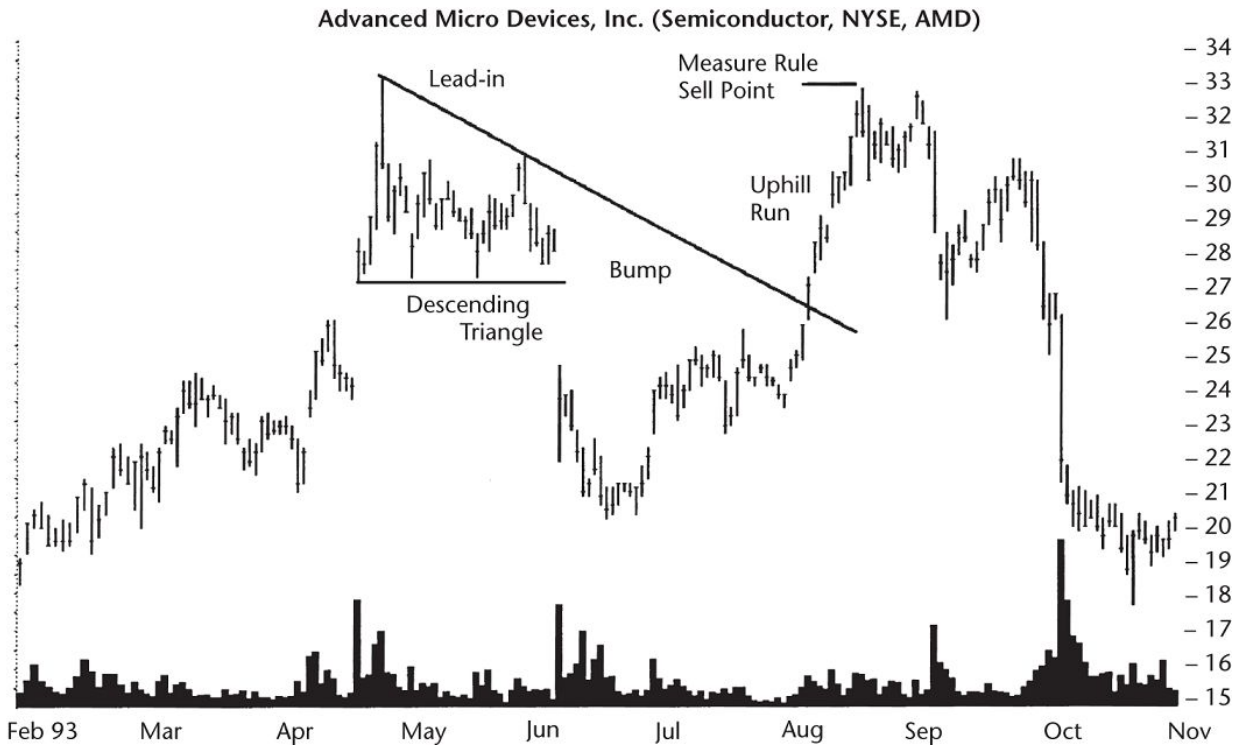


Figure 14.5 This is a bump-and-run reversal that stopped rising within 15% of its old highs.

In June, parts began falling off the semiconductor stock. The breakaway gap saw price plummet over $4 to close at 23.75 on 7 June, then continue lower, reaching a low in June in the middle of the bump phase. From the low, price recovered and moved higher until reaching a high just 25 cents below the price at the start of the BARR pattern. Then the stock faded. A sale at the old high would have been timely in this example.

Experience

As well performing as this pattern is, I have only traded it once, mostly because it has so many rules that it's hard to find. I don't just *see* the pattern during the stock scans; I have to *hunt* for it. **Figure 14.6** shows the damage.

The BARR took shape in April 2018 with the lead-in portion of the pattern (A). The stock formed the bump (B), dropped, and completed the rounded turn. Price climbed up to the trendline and backed off, creating a second bump, C (a dual-bump BARR). When the stock closed above the trendline, I bought at the open the next day, but a position that was about two-thirds the normal size (which is typical. If the trade does well, I'll buy more to fill out the position).

There were lots of warning signs in my notebook entry for the trade: "7 July 2018: huge insider selling (lots of people) but for small amounts as high as 20k shares but most about 3–4k. S&P says strong buy as of 11 May 2018, medium risk. Credit Suisse says outperform but no report available. All analysts are positive on this. Ford says hold, though."

Figure 14.6 This BARR bottom trade didn't work as expected.

This trade was meant as a long-term holding, with resistance at 82 and 85 and support at 75–77. A stop-loss order was set for 77 or 4.4% below the buy price, but as a long-term holding, I didn't place it. I did note that “Weekly scale: Stair-step rise, Elliott wave: stage 5. Yikes!” Danger, danger, Will Robinson (have I dated myself?).

The industry was moving lower with 6 stocks up and 11 down compared to 16/1 (up/down) over the prior 2 months and 11/6 over the prior 6 months. My computer screamed at me, “WARNING: THE INDUSTRY IS TRENDING DOWNWARD! You're about to lose money…”

Did I listen? “Buy reason: BARRb, up bkout. That says it all, in an industry that's doing well (9 of 59 [relative strength compared to other industries where 1 is the best performing]).”

Fast forward to 17 April 2019. “Sell reason: This just looks like it might return to the Dec 2018 launch price. It's not been a good performer for me, so I'm dumping the dog. Wells Fargo downgraded the stock today (15th), I think. I sold on weakness.”

The launch price I'm referring to was the drop to F. That's where the stock started its climb to the double top in February and April (H and H). I didn't want to see the stock return to the price at F, so I sold it at E.

In fact, the stock *did* drop to the launch price and dropped a bit below it, to G.

As bad as the chart looks, I only lost 10%. About a week after I sold (I), the company announced earnings that the market hated. The stock dropped and gapped (exhaustion gap) even lower the next day.

The entry to this trade was perfect. The exit was late. Between the two, the stock made a substantial decline before partially recovering.

If I had a rule that said sell if a buy-and-hold position drops 20%, then my loss would have been double what it was. However, there is a clue to what I did wrong, and it appears at J. Price gapped lower (breakaway gap) after the announcement of earnings.

Often with buy-and-hold positions, you're looking to hold for years, so I ignore earnings results. However, earnings came about a month after I bought and the market didn't like it. That announcement set up

a price cascade that saw the stock drop from the high by 29% (to the low at F). Often I'll sell after poor earnings in my swing trades, but apparently chose to ignore it in this buy-and-hold.

- Lesson: Sell quickly if the market doesn't like an earnings announcement. Otherwise, it could be months or longer for price to recover.

Sample Trade

Perhaps the most interesting way to illustrate trading tactics is by example. John is new to investing, and he did not take the time to learn thoroughly about BARR bottoms. As he flipped through his stock charts one day, he noticed an intriguing situation developing in the stock depicted in **Figure 14.7**.

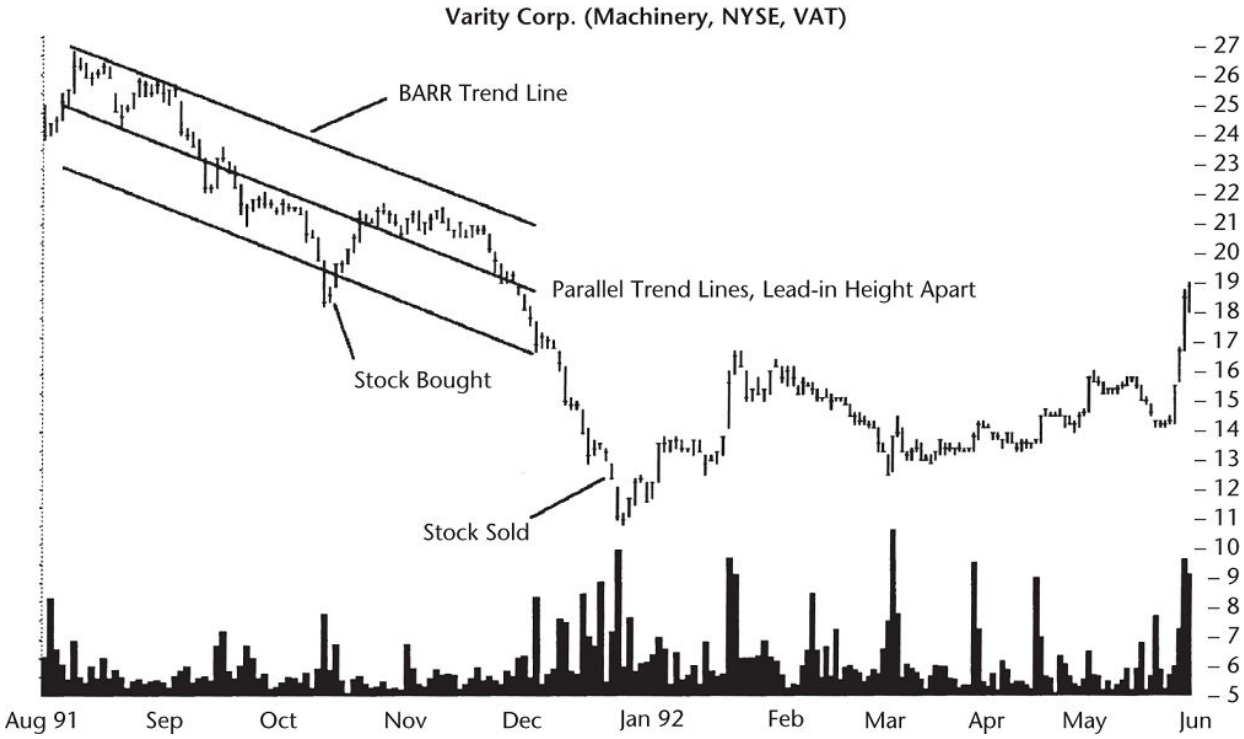


Figure 14.7 A bump-and-run reversal bottom failure in which John invested. He finally sold the stock just 2 days before it reached its low.

During August, the stock peaked, declined a bit, and then formed a second minor high. As the stock declined from the second high, John drew a trendline down connecting them. Soon, he noticed that the stock was descending in a sort of channel. He drew a second trendline, parallel to the first that connected the lows.

However, the stock soon pierced through the second trendline and moved lower. “I thought I recognized a BARR bottom forming, so I drew a third trendline,” parallel to the other two and lead-in height apart.

“When the stock dipped below the lowest trendline, I thought the decline was over. So the next day, I bought 100 shares at 18.25. I was

tickled to buy the stock a bit below the closing price for the day."

For the next week, the stock shot upward and pierced the middle trendline. John called me up. "Trading stocks is an *easy* game!" he said. "I can't lose!"

The stock began consolidating, but he showed no concern. Flat periods of trading often follow quick rises.

When the stock neared the top trendline, John calculated the target price, using the old method (using the pattern's height) instead of the target being the highest high in the pattern. He computed the lead-in height by subtracting the daily low from the trendline at its tallest part in the first quarter of the pattern. He used the low of 20 August, at 24, and subtracted this from the trendline value of 26, measured vertically. This left him with a lead-in height of $2.

John thought that the stock would likely break out at about 21.25, so this gave him a target price of 23.25, which is the lead-in height added to the breakout price (and not the top of the pattern).

"If this works as I expect it to, I'll make more than 25%. Isn't that terrific?"

For about a month, the stock moved sideways, but this did not alarm him. He even expected the stock to decline a bit and recapture some of its quick gains.

But he was growing impatient. "When is this going to break out upward?" he asked. "It's stuck in a trading range. I know it's going up, but I want it to go higher not tomorrow, not next week, but now!"

After the stock approached the top trendline and went horizontal, it started dropping in November.

It touched the middle trendline.

"These things retrace between 38% and 62%." He grabbed his calculator and computed the retrace value.

The stock reached a high of 21.43 in a straight-line run from the low at 18, a rise of about 3.50 points. Now the stock was retracing the gains and had moved down to 18.75, for a 78% retrace. Clearly, this was out of the realm of a simple retrace.

“Should I be worried? I think the trend has changed, but I expect the stock to touch the middle trendline and start recovering.”

The stock paused for 3 days at the middle trendline before moving lower again. It quickly fell below his buy price and headed down.

“I know this was supposed to be a short-term trade, but I'm holding onto this for the long term. As soon as I get my money back, I'll sell.”

The stock moved below the bottom trendline. The *easy game* was now turning into a disaster.

“I thought about selling right there,” he pointed at 11 December when the stock reached 12.75, for a 30% loss. “But this trade is a long-term holding. I should expect some weakness.”

The next day, the stock closed higher, and it gave him renewed hope. Indeed, it closed even higher the following day. But the 2-day recovery was an illusion and the stock declined again. As it plunged below 12.75, John threw up his hands and told his broker to dump the dog. He received a fill at 12.25, the low for the day. From the buy price, John lost 35%.

Two days later, the stock bottomed at about 10.75.

As upset as this made John, the stock was not finished tormenting him. He continued to follow it and watched it recover. He extended the BARR trendline downward (**Figure 14.8**, weekly scale) and noticed that a new, larger BARR had formed. After suffering through the large bump in December, the stock moved higher until it touched the BARR trendline. Then, the stock slid along the trendline, following it lower, unable to pierce the resistance.

During the week of 27 March 1992, the stock closed above the trendline for the first time in months. The BARR was complete, and a confirmed breakout was occurring.

Did John buy the stock? No. For several months, he watched its progress as it moved higher almost week after week. Disgusted, he quit following the stock.

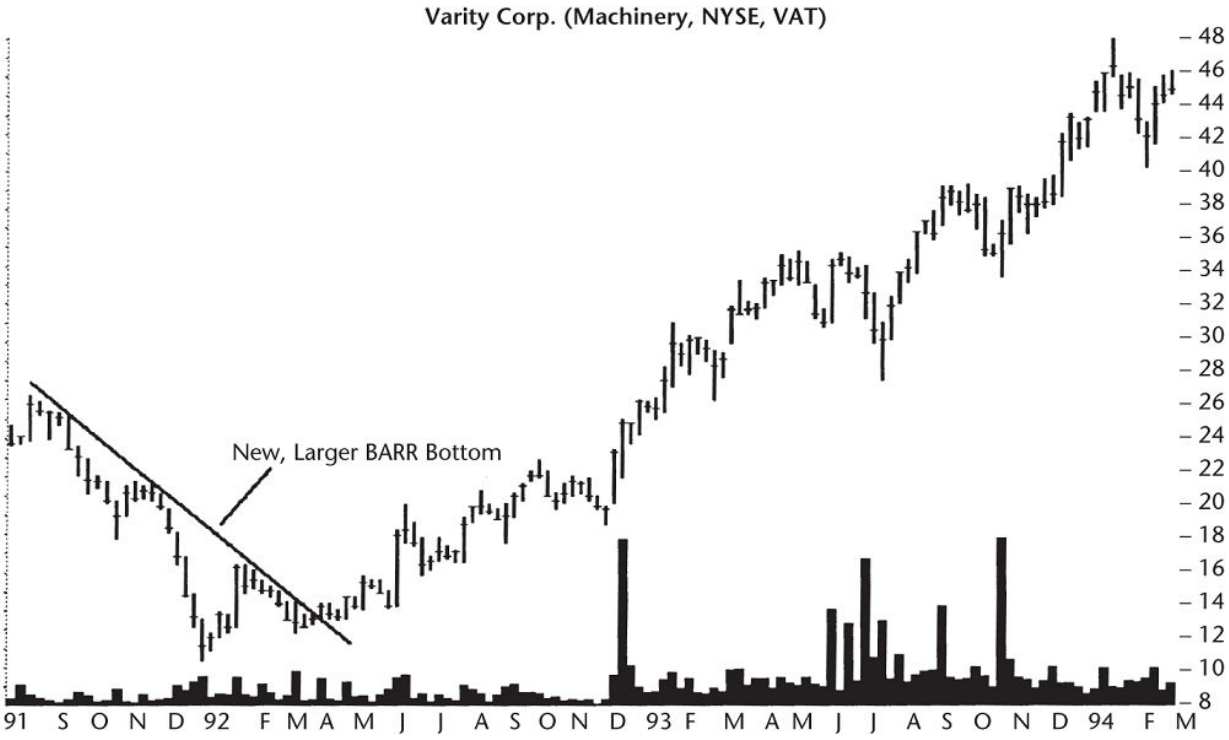


Figure 14.8 A bump-and-run reversal bottom on a weekly scale. After the breakout, the stock climbed over 350%.

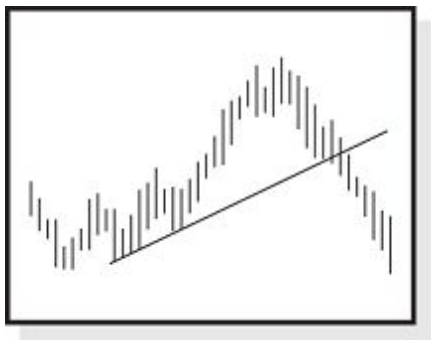
In April 1994, John took another look at the stock and was surprised to see that it continued moving higher. It had just reached a high of 50.13, a climb of almost 370%. He grabbed his calculator and realized that his mistake cost him over $3,000.

“What did you do wrong?” I asked him.

“Several things. I didn't wait for the BARR to pierce the top [lead-in] trendline and move higher. If I had, I would have bought closer to the low, saving lots of money.

“The big mistake was not cutting my losses short. After I bought, I should have determined my stop price. When price climbed above the middle trendline, below that support would have been a good place for a stop-loss order.” In this case, it would have taken him out of the stock at about 17.88, a small decline from the purchase price of 18.25. “Instead, I followed the stock down and changed my investment philosophy from a short-term trade to a long-term holding.”

15
Bump-and-Run Reversal, Top



RESULTS SNAPSHOT

Appearance: Price rises steadily along a trendline, bumps up, rounds over, and then declines through the trendline and continues down.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	3 out of 36	3 out of 19
Breakeven failure rate	14%	7%
Average decline	17%	24%
Volume trend	Upward	Upward
Pullbacks	64%	65%
Percentage meeting price target	44%	65%

If you were thinking of buying stock in a company, wouldn't it be wonderful if you knew the purchase price would be less tomorrow? Of course! But how do you predict tomorrow's price? That is the problem I was researching when I discovered the bump-and-run reversal top. I was trying to figure out a reliable way to determine if tomorrow's price would be higher or lower than today's and by how much.

I tried all sorts of mathematical games to boost the accuracy of the prediction with only limited success. Then I moved to the visual world. I drew a trendline along a stock chart and wondered if I could determine how far price would decline below the line. I looked at many stock charts and trendlines trying to see if there was a relationship between a trendline and the breakdown of the trend. That is when I discovered it: the bump-and-run formation—BARF for short. I toyed with the idea of leaving the name as is but decided that the investment community wouldn't believe the veracity of the new pattern. So, I changed the name to bump-and-run reversal (BARR), a slightly more descriptive and palatable acronym.

The above Results Snapshot shows that the pattern ranks third for performance in both bull and bear markets where a rank of one is best. That means the average decline is better than average. That sentence reminds me of the Department of Redundancy Department. One quick note: The “percentage meeting price target” is based on the stock dropping to the low posted at the start of the BARR, not on the pattern's height.

Let's take a tour of the pattern.

Tour

Figure 15.1 shows a good BARR example. The overall pattern reminds me of a mountain range. The foothills at the start of the pattern are low and subdued, not venturing too far above the up-sloping plain. Volume at the start of the pattern is high but recedes quickly. The mountains rise well above the foothills on high volume. Investor enthusiasm continues as price rounds over at the top, then diminishes on the far side. When the mountains end, price declines sharply and continues down. That is a BARR pattern: Price bumps up, rounds over, and runs back down.

The chart pattern is the visual representation of momentum. The base of the pattern follows a trendline that always slopes upward. It signals investors' eagerness to acquire the stock. As each day goes by, investors bid higher to reluctant sellers and the price rises.

Other momentum players eventually notice the rise in the stock's price. Many jump on the bandwagon the day after a surprisingly good earnings announcement. That's when the bump begins. Volume spikes upward along with the stock's price. Quickly rising prices entice others to join the fray and that in turn sends the stock even higher. As momentum increases, price jumps to form a new, higher-sloping trendline. Then things start going wrong.

Supply catches demand. As that happens, the rise slows and the smart money turns cautious. Investor enthusiasm wanes, and the war between supply and demand turns. The stock rounds over and starts heading down.

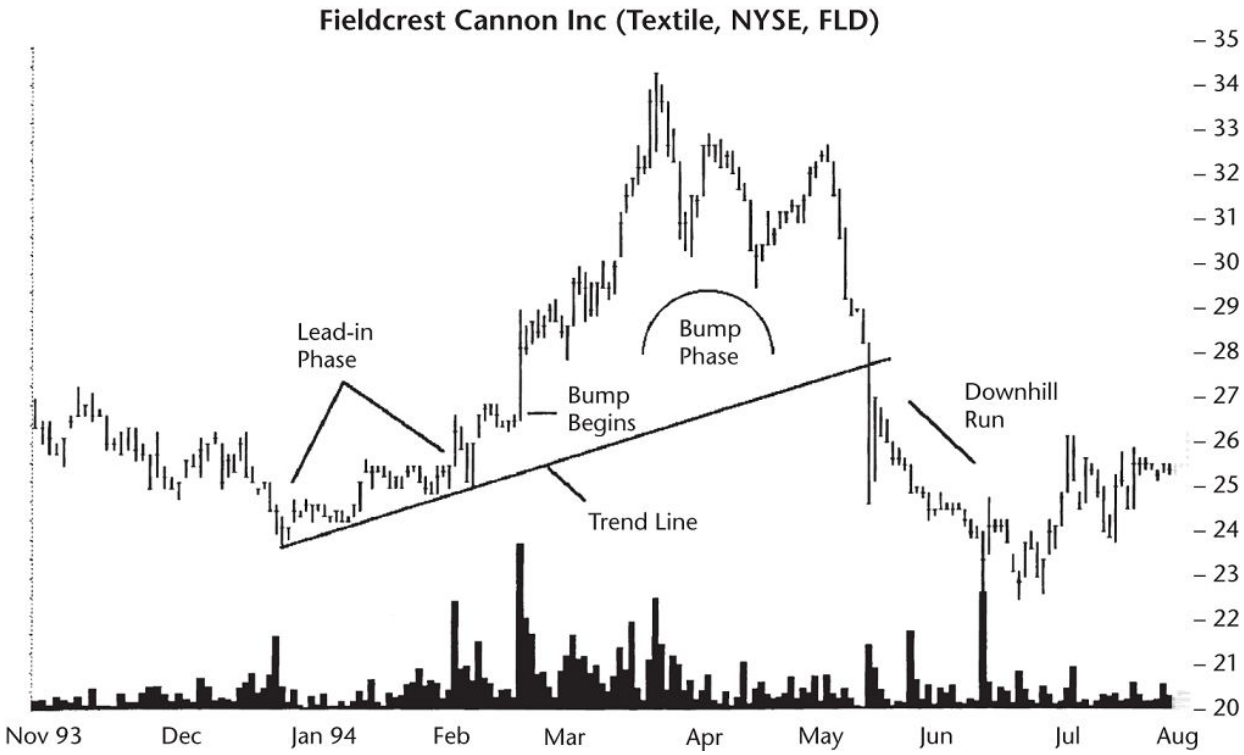


Figure 15.1 Price moved higher along the trendline in the lead-in phase, jumped up during the bump phase, and then crashed down through the trendline during the downhill run. Volume at the start of the BARR and again at the start of the bump is usually high but tapers off as the bump rounds over. About half the time volume picks up where price pierces the trendline.

When the smart money sees price falling, they sell and the decline picks up speed. Downward momentum increases and returns price to the trendline. At this point, buying enthusiasm may increase and send price back up for one last try at a new peak. Usually, however, price does not bounce off the trendline but continues down. Sometimes there is a pause and sometimes price just plunges straight through the resistance line, as illustrated in Figure 15.1.

Once price pierces the trendline, volume increases as investors dump the stock. This selling alarms more investors, and the downward trend feeds on itself. Eventually, after several months of declining price, the selling pressure abates and buying enthusiasm halts the downward slide. Price tentatively levels out and perhaps even rebounds some. Once the cause of the reversal fades from memory, price starts rising again and the process begins anew.

Identification Guidelines

Table 15.1 outlines the various parts of the BARR that are illustrated in Figure 15.1.

Table 15.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price climbs at the start of the pattern, waving up and down in a narrow range, then price explodes upward and soars to form a significant bump. Price tumbles thereafter.
Arithmetic scale	Do not use a semilogarithmic scale; instead use an arithmetic one.
Rising trendline	A trendline connecting the lows rises steadily. Don't allow any patterns with horizontal or near-horizontal trendlines. The trendline usually rises at about 30–45 degrees (although this varies with scaling). Avoid trendlines that are too steep (over 60 degrees).
Lead-in phase, lead-in height	The lead-in phase is the section just before price moves up sharply in the bump phase. Lead-in price should have a high–low range of at least $1 (preferably $2 or more), as measured from the highest high to the trendline, vertically, during the first quarter of the overall pattern length. Minimum lead-in length is 1 month (but be flexible) with no maximum value.
Rounded bump	Price rises up (trendline slope is 45–60 degrees or more) on high volume usually after a favorable event (unexpectedly good earnings, an analyst recommends or upgrades the stock, higher store sales, that sort of thing). Price eventually rounds over and declines back to the 30-degree trendline. The bump must be at least twice the lead-in height, measured from highest high to the trendline, vertically.
Dual bumps	A second bump may form after the first bump ends.
Downhill run	After returning to the trendline, price may bounce up and form additional bumps or slide along the trendline. Eventually price drops through the trendline and continues down.

Characteristic	Discussion
Volume	Irregular shape but tends to be high at the start of the lead-in phase, bump phase, and breakout.
Breakout direction	Downward, by definition.
Confirmation	If price does not close below the bottom trendline, then you don't have a valid pattern.

Appearance. Look for price to rise at the start of the pattern, but the high–low range is short compared to the bump phrase. Price rises following a trendline. During the bump phase, price forms a tall mountain. After that, the stock heads down and continues dropping, plunging through the trendline setup during the start of the chart pattern.

Arithmetic scale. Use the arithmetic scale, not a semilogarithmic one, because the semilog scale distorts vertical distance.

Rising trendlines. In the figure, an up-sloping trendline drawn below the lows in the stock extends until it intersects price as it declines in May. Volume is high at the start of the pattern, and the price trend is up. That is a key consideration: Price must be rising. The trendline should be approximately 30 degrees, but the degree of slope depends on the scaling used to view the chart. *If the trendline is flat or nearly so, it is not a good BARR candidate*. A rising trendline shows investor enthusiasm for the stock. However, the trendline should not be too steep, either. Steep trendlines (over 60 degrees or so) do not allow enough room for the bump to complete properly.

Lead-in phase, lead-in height. The first part of the pattern, called the lead-in phase, leads to the bump phase. The lead-in phase should be at least 1 month long (but be flexible) and usually falls in the 2- to 3-month range, but can be considerably longer. Price oscillates up and down in this phase and has a range of at least $1 as measured from the highest high to the trendline (but this will vary with the price of the stock). This range, called the lead-in height, is calculated using price from the first quarter of the entire chart pattern.

Figure 15.1, for example, shows that the highest high during the first quarter of the pattern occurs on 12 January 1994, at 25.63. The

trendline directly below this date has a value of about 24.25, giving a lead-in height of 1.38. The height is important because the minimum bump height and target price, calculated later, use this value. A more accurate approach is to use the *tallest* distance from the trendline to the high, which is not necessarily found between the *highest* high and the trendline. Use whatever method makes you feel comfortable.

During the lead-in phase, subdued price action looks as if the stock is gathering strength for the bump phase. Price does not move very far away from the trendline and usually appears rounded. If you visualize the chart pattern as a mountain range, the lead-in phase represents the foothills.

Volume during the lead-in phase is high at the start. Often this is due to events that occur just before the BARR begins. Volume drops off until the start of the bump, when it suddenly rises. The higher share turnover and buying enthusiasm for the stock forces price up. In Figure 15.1, this price rise occurs on 17 February and is accompanied by volume that is the highest in half a year.

Rounded bump. Price jumps up at the bump start and quickly rises from a low of 26.50 to a high of 34.38 during late March. Volume remains high throughout this period, then quickly tapers off as price rounds over at the top. Many times, the top takes on the appearance of a head-and-shoulders pattern or a double or triple top. If you recognize any of these patterns on your chart, ignore the BARR top formation and obey the implications of the individual patterns.

The bump height, as measured from the highest high to the trendline, should be at least twice the lead-in height. In this example, the bump height is 8 (that is, 34.38 – 26.38). This is more than twice the lead-in height of 1.38.

The reason for the minimum two-to-one ratio is arbitrary. The idea is to make sure that investor enthusiasm and, hence, momentum are getting carried away. An up-sloping trendline that turns into a bump with a higher sloping trendline emphasizes the rising momentum. Sustaining such unbounded enthusiasm for too long is difficult, and the stock eventually declines.

In Figure 15.1, a decline is exactly what happens. Price rounds over and starts heading down. Sometimes the decline is orderly, and

sometimes it is choppy. In nearly all cases, price returns to the trendline. Once there, the stock may do several things.

Dual bumps. Fairly often price bumps up again, and that is called a BARR with a dual bump or a dual BARR. Occasionally, a dual BARR consists of several bumps, but the result is still the same. Price eventually falls below the trendline.

Downhill run. Sometimes price slides up along the trendline for a month or so before continuing down. At other times, price drops straight through the trendline, turns around and climbs again, before ultimately dropping. In a few rare cases, price descends from the bump high and never makes it back to the trendline before moving higher. These cases commonly appear on weekly or monthly price charts. If price fails to close below the trendline, then the BARR pattern is invalid.

Breakout direction, confirmation. The breakout from this pattern is downward by definition. If price doesn't breakout downward, then it isn't a valid BARR top.

Focus on Failures

In the weekly chart shown in **Figure 15.2**, the first BARR on the left shows high volume during the initial stages of the bump, as you would expect. The bump height to lead-in height ratio looks good (over 2:1), and clearly investor enthusiasm is high. However, price continues climbing instead of rounding over and heading down. The pattern is not a valid BARR.

Contrast the failed BARR with the one in the center. The middle BARR has a nicely rounded appearance. The volume pattern is what you would expect: high at the start, at the start of the bump, and when price crosses the trendline. However, price drops below the trendline by just 4%. Any stock recovering after dropping no more than 5% below the breakout price is called a 5% failure.

The BARR on the right is a dual BARR. Price nears the trendline in late March 1994 (but remains above it in this case, so it's a flawed example of a dual BARR), and then just as quickly climbs again, forming a second peak before dropping through the trendline. Often the peak of the second bump is below the first.

On weekly and monthly price charts, you will often see price moving up steadily over time. However, without the sharp bump-up of price, the rising trend should not be labeled a BARR. The slope of the price trendline should rise from about 30 degrees at the start to 60 degrees or higher during the bump phase. Your chart's aspect ratio may make determining the degree of slope more difficult.

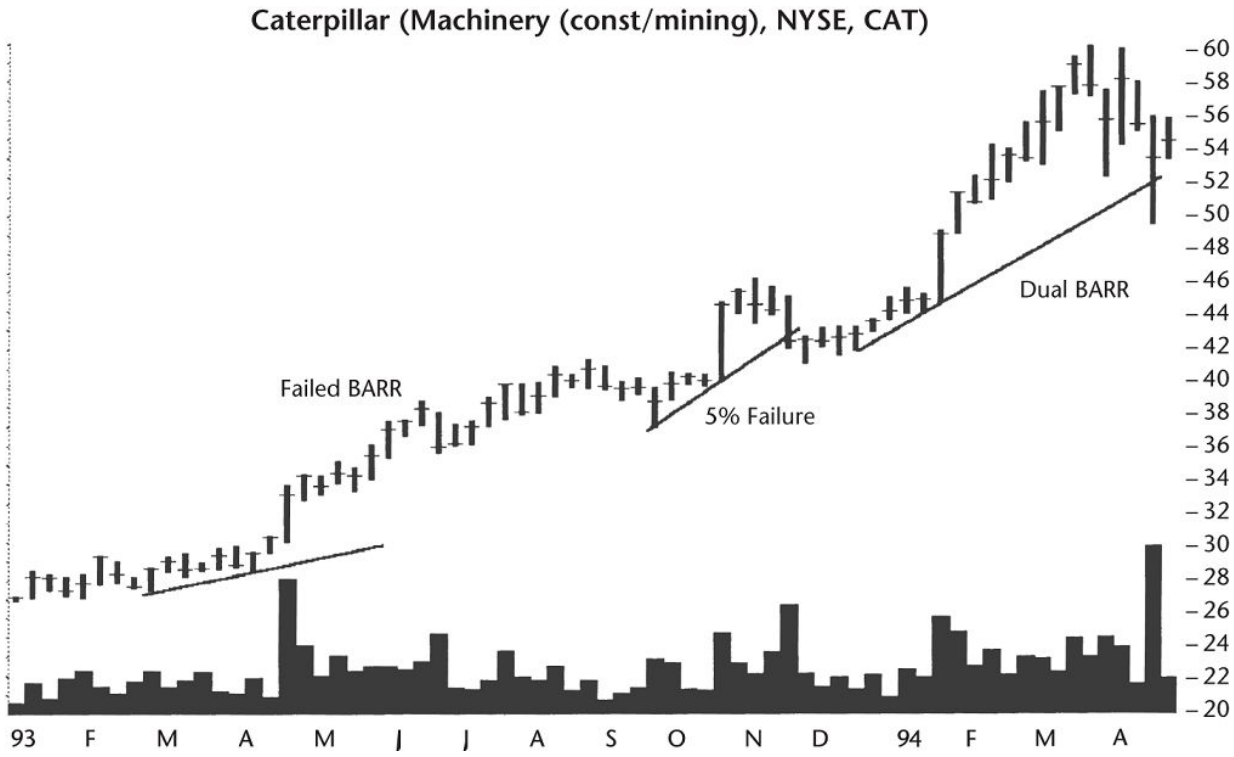


Figure 15.2 A bump-and-run reversal shown on a weekly chart. The potential BARR on the left fails as price climbs away instead of moving below the trendline. The rounded-appearing center bump-and-run reversal has good volume characteristics—high volume at the formation start, bump start, and trendline crossing. However, price declined below the trendline just 4%. That is called a 5% failure. The right bump-and-run reversal is a dual bump-and-run reversal because price approached the trendline in March, formed a second peak, and then dropped below the trendline.

To reduce the failure rate, wait for price to close below the trendline. Waiting boosts the success rate but reduces the profit that you would make if you sold near the top. In the Trading Tactics section of this chapter, I'll show you how to sell near the top before the decline really begins. That way you can keep more of your profit or make even more by shorting.

Statistics

Table 15.2 shows general statistics for BARR tops.

Number found. BARR tops are plentiful. I found the first one in July 1991 and finished my search in August 2019. During that time, I found 1,766 in 758 stocks.

Reversal (R), continuation (C) occurrence. Most of the patterns acted as reversals of the prevailing price trend, not as continuations. Because we know the breakout will be downward from a valid BARR top, the inbound price trend for a reversal must be below the pattern.

Table 15.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,488	278
Reversal (R), continuation (C) occurrence	76% R, 24% C	73% R, 27% C
Reversal, continuation performance	–17% R, –19% C	–24% R, –25% C
Average decline	–17%	–24%
Standard & Poor's 500 change	–1%	–12%
Days to ultimate low	67	54
How many change trend?	33%	57%

Reversal/continuation performance. There's not a big performance difference between reversals and continuations as the table shows.

Average decline. As you would expect, the average decline in bull markets (17%) is less than the superb results in bear markets (24%). Both are better than the average decline for all chart pattern types, which is why the pattern has a good performance rank.

Standard & Poor's 500 change. In bull markets, the S&P 500 index dropped 1%. I expected to see a rise, so I checked the statistics and they are correct. However, BARR tops are a bearish chart pattern.

Perhaps price drops along with a falling general market, even though the market trend remains bullish (bull markets).

The index in bear markets, with declines averaging 12%, helps pull the stocks showing BARR tops lower after downward breakouts.

Days to ultimate low. It takes about 2 months to reach the ultimate low. Notice, however, that the 24% drop in bear markets takes 54 days but a 17% drop in bull markets takes 67 days. The bear market decline has a higher velocity, but by how much? Answer: The bear market drop is almost twice as fast as the one in bull markets.

How many change trend? It's rare that bearish chart patterns see price drop more than 20%. I consider values above 50% to be good, but that's for upward breakouts. Even so, the bear market with more than half of the patterns showing declines above 20% speaks to an especially precarious situation. If you see a BARR top in a bear market, and have the skills to manage a short sale, then consider shorting the stock after a downward breakout. You can make a lot of money quickly if you trade it properly.

Table 15.3 lists failure rates for BARR tops. Failures start small compared to other chart pattern types, especially in bear markets. As one might expect, the failure rates in bear markets are smaller than those in bull markets.

Half the patterns in bear markets will fail to drop more than 25%. In bull markets, the halfway mark passes at 14% (not shown), meaning half the patterns will fail to decline more than 14%. Compared to other bearish chart patterns, these failure rates are small. However, notice how the failure rates climb rapidly when we allow the maximum decline to change from 5% to 10% and higher.

Table 15.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	202 or 14%	19 or 7%
10	298 or 34%	34 or 19%
15	285 or 53%	37 or 32%
20	214 or 67%	30 or 43%
25	163 or 78%	41 or 58%
30	102 or 85%	27 or 68%
35	73 or 90%	28 or 78%
50	124 or 98%	43 or 93%
75	25 or 100%	19 or 100%
Over 75	2 or 100%	0 or 100%

One way to use the table is with the measure rule. Later, in Trading Tactics I discuss the rule, but suppose it predicts the decline of a stock from $20 to $15 after the breakout. That five-point drop is 25% of the price of a $20 stock. How likely is it that price will actually decline that far? Table 15.3 shows the answer. In bull markets, 78% will fail to drop more than 25%, and in bear markets, 58% will fail to make it down that far. Thus, in both markets, price is unlikely to reach the target. That's an average, so your results will vary.

Table 15.4 shows breakout-related statistics for BARR tops.

Breakout direction. By definition, BARR tops have downward breakouts. A breakout occurs when price closes below the up-sloping trendline at the bottom of the pattern.

Yearly position, performance. Where do the best performing BARR tops break out (and I'm not talking about acne)? The star performers have breakouts near the yearly low. To put it another way, avoid trading BARR tops with breakout prices within a third of the yearly high. They perform worst.

Pullbacks. A pullback occurs almost two-thirds of the time, and it takes about 2 weeks for the stock to return to the breakout price. That means price drops for a week, ending 6% to 9% below the breakout before starting the return trip (on average).

Notice that when a pullback happens, performance suffers, and suffers dramatically. Once the pullback completes, the stock resumes the downtrend over 60% of the time on average.

Check for underlying support nearby—anything that might send price higher. If you short a stock and price heads back up, it may be a temporary situation caused by a pullback. Price should return to (or come close to) the breakout price before resuming its downward move. If price continues higher, close out your short position. If price continues down, consider adding to your short position or opening a new one.

Table 15.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –21%, M –18%, H –15%	L –25%, M –25%, H –21%
Pullback occurrence	64%	65%
Average time to pullback bottoms	–6% in 7 days	–9% in 7 days
Average time to pullback ends	13 days	14 days
Average decline for patterns with pullbacks	–16%	–23%
Average decline for patterns without pullbacks	–20%	–27%
Percentage price resumes trend	63%	61%
Performance with breakout day gap	–16%	–23%
Performance without breakout day gap	–17%	–24%
Average gap size	$0.42	$0.59
Number of dual bumps	18%	21%

Gaps. This is odd: Gaps hurt performance. Trading lore says that a breakout day gap helps performance, and we've seen that in other

chart pattern types. Note that the performance difference between gaps and no gaps is one percentage point. So the differences are probably not statistically significant.

Number of dual bumps. Sometimes price will bounce off the trendline and form another bump. That is what I call a dual bump. Compare **Figure 15.3** with **Figure 15.4**. The stock in Figure 15.3 has a bump with a rounded appearance, giving investors plenty of time to sell the stock near the high.

Figure 15.4 shows a chart pattern with a much narrower peak. Investors had only a few days to catch the top before price moved down quickly. The chart in Figure 15.4 is also a dual BARR (two or more bumps). There is a second, smaller bump just before price heads below the trendline. Dual- or multiple-bump BARRs occur 18% to 21% of the time.

Table 15.5 shows size statistics.

Height. BARR tops don't see a big performance difference between tall and short patterns. Bull markets *do* show a difference (two percentage points), but the bear market shows the reverse (short patterns doing better).

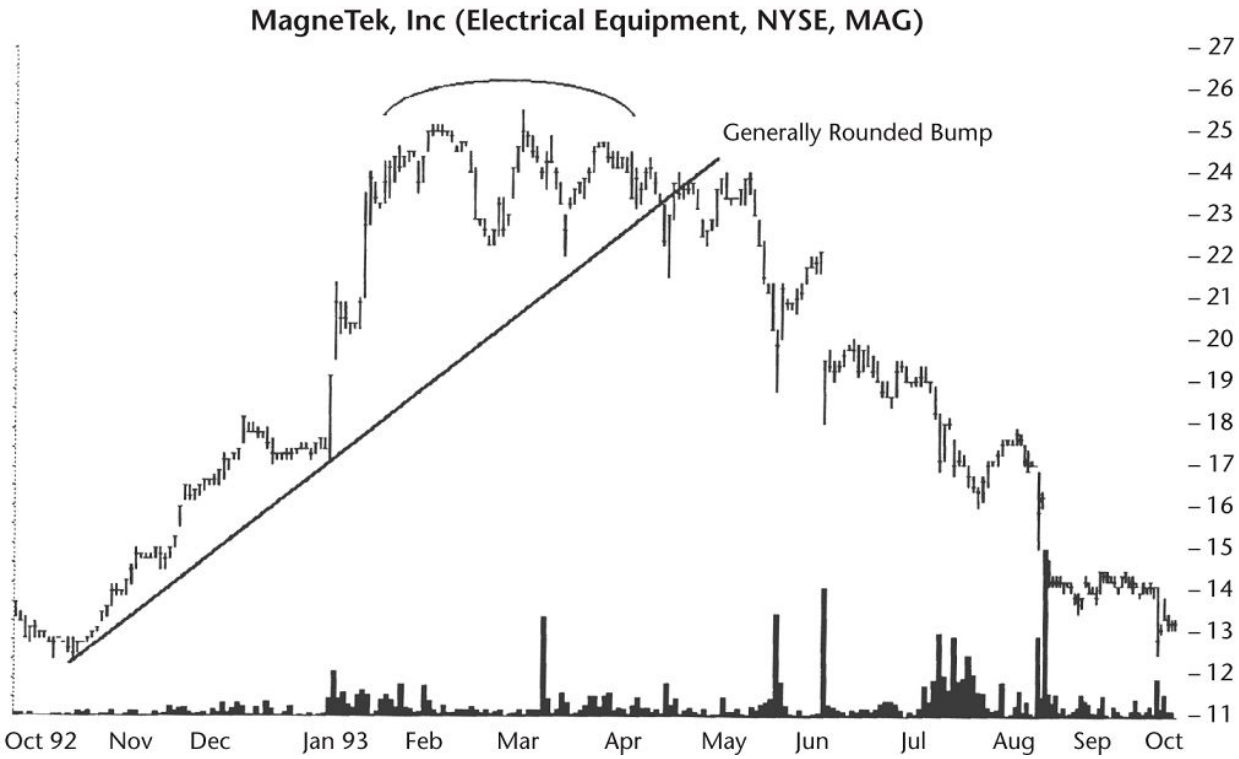


Figure 15.3 A bump-and-run reversal with a rounded bump occurs 76% of the time on average. The ultimate low reached in October is at a price of 12.25, a decline of over 50%.

Figure 15.4 Shown is a bump-and-run reversal with a pointed-looking first bump, leaving investors precious little time to get out of the stock. Many semiconductor stocks showed similar price patterns in late 1995, setting the stage for an industry-wide downturn. The ultimate low reached in mid-January 1996 comes after a decline of nearly 70%.

Table 15.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–18%	–24%
Short pattern performance	–16%	–25%
Median height as a percentage of breakout price	32.0%	32.0%
Narrow pattern performance	–17%	–25%
Wide pattern performance	–18%	–24%
Median width	112 days	96 days
Short and narrow performance	–16%	–25%
Short and wide performance	–16%	–23%
Tall and wide performance	–18%	–24%
Tall and narrow performance	–19%	–24%

I computed the difference between the highest high in the pattern and the lowest low and then divided the height by the breakout price. Values above the median I considered tall; values below the median mean the pattern is short. As a general rule, stick to trading tall patterns.

Width. Again, results are mixed and probably not statistically significant anyway. I used the median length as the divider between narrow and wide. Because wide patterns tend to do better than narrow ones (as a general rule, in other chart pattern types), I would stick to picking wide ones.

Height and width combinations. In bull markets, tall and narrow patterns do well. In bear markets, short and narrow ones outperform. You'll want to avoid short and wide ones, though. They show the worst performance across bull and bear markets.

Table 15.6 shows volume-related statistics.

Volume trend. Measured from the start of the pattern to the end, linear regression on volume indicates that volume trends upward

throughout the pattern. Does volume really matter to performance? Let's take a look.

Rising/Falling volume. BARRs with falling volume performed better than did those with rising volume. That's especially true in bear markets.

Breakout day volume. I don't see a lot of difference in performance for breakout day volume. In other words, a volume spike higher than the prior 30 days doesn't change performance much (and hurts it in bull markets).

I don't show **Table 15.7** (how often stops hit) because the way my computer calculates the stop location, the results are meaningless for BARRs.

Table 15.8 shows the performance over three decades.

Performance over time. Performance doesn't vary much over the last 30 years. The 2000s were the worst performers, and the best was during the 2010s.

Table 15.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	57% up	60% up
Rising volume trend performance	–16%	–23%
Falling volume trend performance	–18%	–26%
Heavy breakout volume performance	–17%	–24%
Light breakout volume performance	–18%	–24%

Table 15.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–17%
2000s	–16%
2010s	–18%
Performance (above), Failures (below)	
1990s	12%
2000s	17%
2010s	15%

Table 15.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	334 or 22%	20 or 7%
Single bust count	288 or 86%	14 or 70%
Double bust count	9 or 3%	0 or 0%
Triple+ bust count	37 or 11%	6 or 30%
Performance for all busted patterns	48%	22%
Single busted performance	55%	29%
Non-busted performance	N/A	N/A

Failures over time. I counted the number of times price failed to drop more than 5% after the breakout. The 2000s showed the highest failures, and the 1990s had the fewest.

Table 15.9 shows busted pattern performance.

Busted patterns count. Comparatively few patterns bust, especially in bear markets.

Busted occurrence. Sorting the bust type into single, double, and more than twice (triple+), we see single patterns happen the vast majority of the time. Double busts are few.

Busted and non-busted performance. I don't have values for non-busted patterns because there is no such pattern. What remains is the comparison of single busted patterns to all three types: single,

double, and triple+. Single busted patterns perform best. I can say that the average rise for all chart pattern types is 42% in bull markets and 28% in bear markets. So single busted patterns perform better than the averages.

Trading Tactics

Table 15.10 lists trading tactics for the BARR top.

Measure rule. Figure 15.5 shows the measure rule in action. You can use the bottom of the pattern (at pattern's start) as the target. The bottom portion of the table shows how often price drops that far.

You can also calculate the pattern's height (or a multiple of it) from highest peak to lowest valley in the pattern and subtract the height from the pattern's breakout price. The bottom portion of the table shows the success rate. For example, using the full height of the pattern, price will reach the target in bull markets just 17% of the time. That's why the bottom of the pattern is a better choice for a nearby target.

Table 15.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The bottom of the pattern can be used as a target. Alternatively, compute the lead-in height (see Table 15.1 for the definition) and subtract the height from the breakout price. The bottom portion of the table shows how often the measure rule works.
Warning line	Drawn parallel to the trendline and lead-in height above it. The line warns that the stock is making a move and is entering the sell zone, an area between the warning and sell lines.
Sell line	A second trendline parallel to the warning line and lead-in height above it. Consider selling when price touches the sell line, especially if the bump is narrow. Delay selling if price continues moving up. Draw additional lines parallel to the original trendline and lead-in height above the prior line, as needed. When the stock rounds over and touches the lower trendline, sell.

Description	Bull Market	Bear Market
Bottom of pattern	44%	65%
Percentage reaching half height target	41%	59%
Percentage reaching full height target	17%	32%
Percentage reaching 2× height	4%	10%
Percentage reaching 3× height	1%	3%

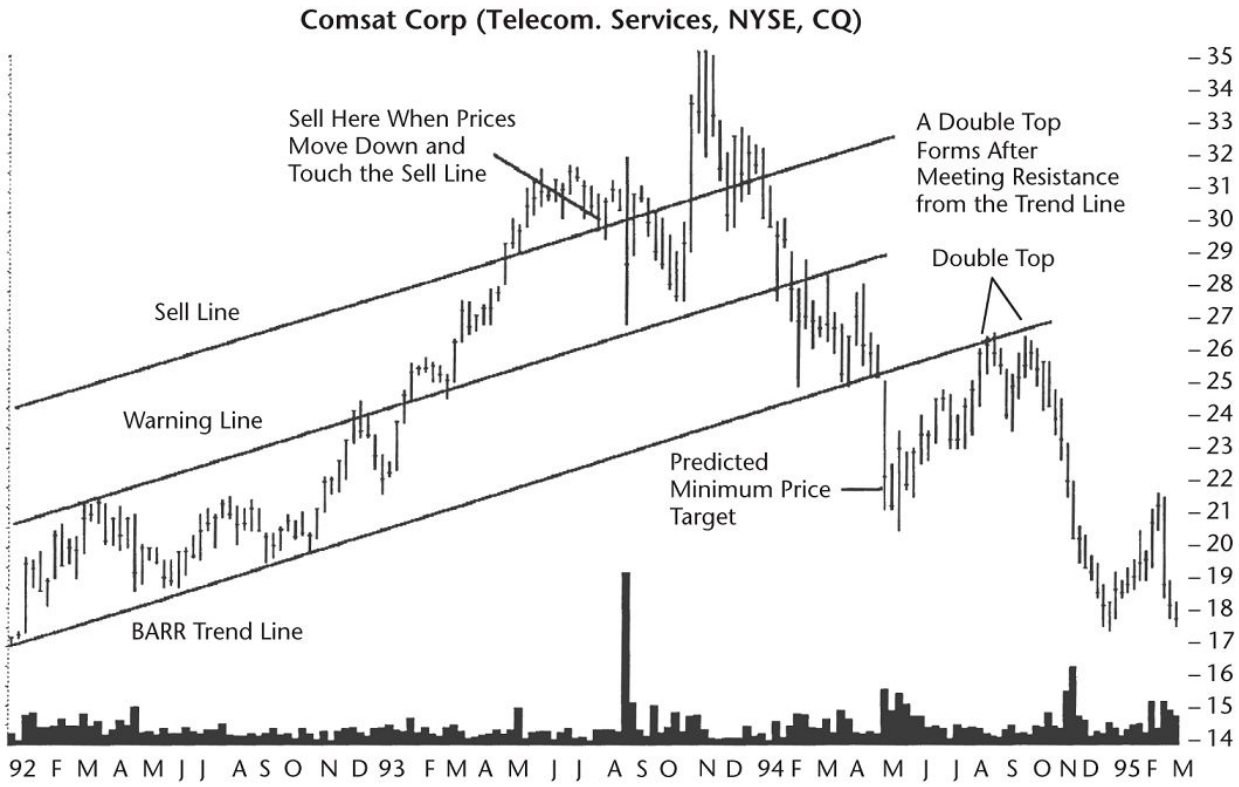


Figure 15.5 Shown is a bump-and-run reversal trendline and parallel warning and sell lines. There is plenty of time to take profit in this bump-and-run reversal. The stock reached a low of 17.50 in December, a 40% decline from the sell point in July. Also shown in the July-to-September period is a double top.

Another method is to calculate the lead-in height by splitting the formation along the trendline into four equal parts. In the first quarter of the BARR, compute the height from the highest high to the trendline, measured vertically (or use the tallest distance between the two). Subtract the result from where the trendline is pierced, heading down (the breakout). In Figure 15.5, the lead-in height is 3.50 (that is, 21.50 – 18). The target price is thus 21.63 (25.13 – 3.50), reached during the week of the breakout.

After the breakout, the stock rises back up to meet the trendline before resuming its decline (in this example). Since a trendline denotes a resistance area when approached from below, it is no surprise price turns away. Price forms a double top in the July-to-September period and plunges downward.

Once you have a target, convert the potential drop into a percentage of the current price and compare the results to Table 15.3. For example, the drop in the above example is 3.50 and we'll use the breakout price (25.13) as the current price. The 3.50 drop is a decline of 14% (100 × 3.50/25.13). Is 14% reasonable?

In bull markets, according to Table 15.3, 53% will fail to see price drop more than 15% (the closest to 14%). About half the trades will see price drop more than 15%, and half won't make it that far.

Warning and sell lines. As you view your stock charts periodically, some stocks will follow trendlines upward. These are the ones to monitor closely. Occasionally, one will begin a rapid climb on high volume and enter the bump phase of a BARR top.

By definition, a BARR is only valid when the bump height, as measured from the highest high to the trendline, is at least twice the lead-in height. Two lines parallel to the trendline assist in that determination. The first line, called the warning line, is lead-in height above the trendline. A second trendline, parallel to the first two and lead-in height above the warning line, is the sell line.

The warning line serves as a signal that a BARR may be forming. Once price moves solidly above the line, consider doing any fundamental or technical research on the stock to prepare for a sale.

By the time price touches the sell line, you should have a firm grasp of the company, industry, and market outlook. The sell line is not an automatic sell trigger, but it does confirm that a BARR is present. A sell line touch indicates that the momentum players have the upper hand. The game could continue for several weeks or months before the downhill-run phase sets in, so do not be in too much of a rush to sell. Since most bumps (peaks) appear rounded, there is ample time to sell the stock. By waiting, you are giving the momentum players additional time to push the stock even higher.

However, there are situations when you will want to sell quickly. If the company, industry, or market look dicey, then perhaps it is time to take profits. You might not be selling at the exact top, but you never go broke taking a profit. Also, if the bump does not appear rounded, then consider selling. A quick decline often follows a quick rise.

Figure 15.5 shows the BARR trendline and the parallel warning and sell lines, each line lead-in height from the other. The chart is on a weekly scale, and it emphasizes the relaxed nature of some BARRs. If you owned the stock depicted in the figure and sold it when price pierced the sell line moving down, you would not have sold at the top. However, you would have avoided the 40% decline that followed. The decline also points out that it can be easy to make money on paper, but difficult to keep it.

Sample Trade

Jenny is a librarian. Before she goes home at the end of each day, she logs onto the Internet and checks her stock portfolio. She did not notice it at first, but by mid-September, Jenny spotted a BARR forming in a stock she owned (**Figure 15.6**). She spent an hour searching the Internet for anything she could find about the company. She checked the fundamentals, analysts' recommendations, insider buying and selling, and anything else she could think of.

She reviewed the reasons she bought the stock. Using the Peter Lynch style of investing—that of buying a stock one is familiar with—held a special appeal to her. She liked shopping at the grocery store chain, and the products they sold were something she could really sink her teeth into. She felt comfortable owning the stock.

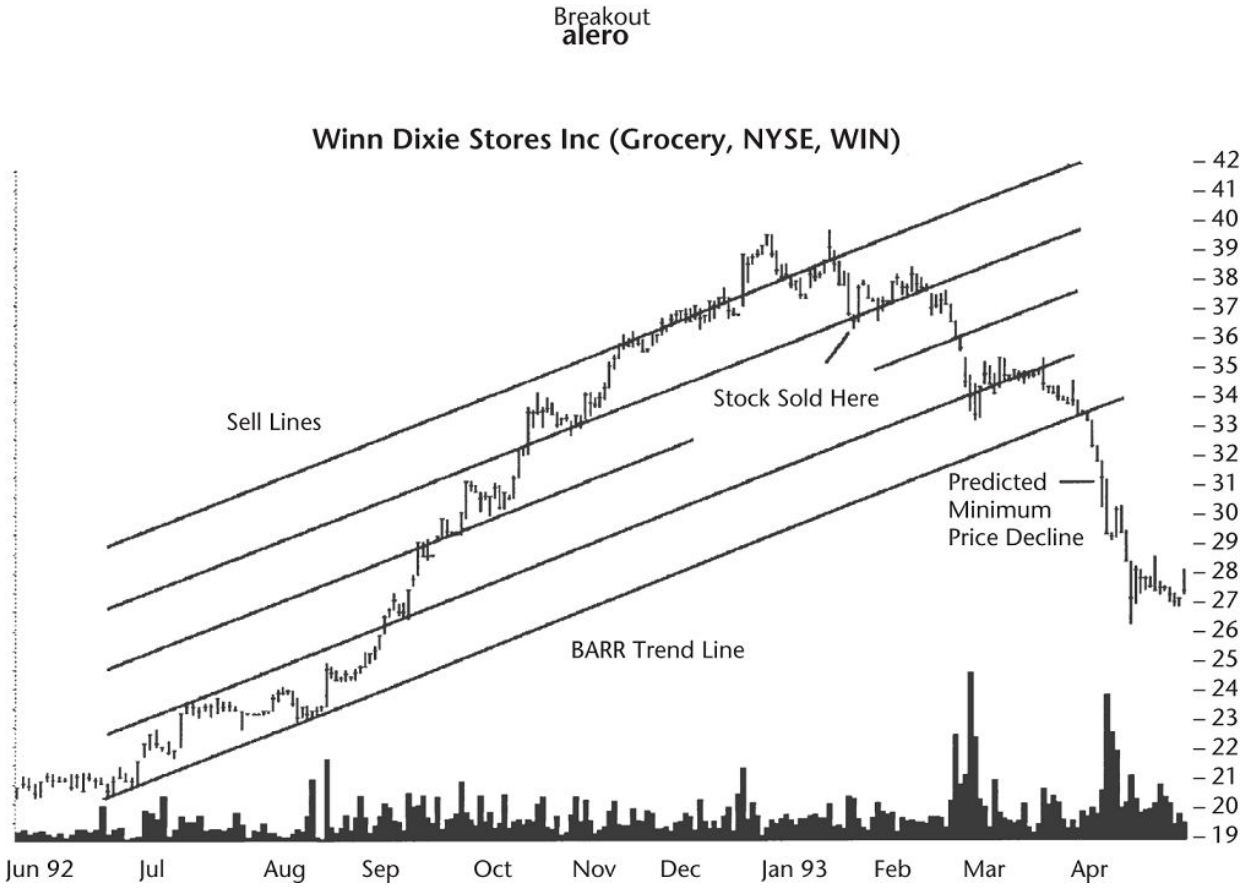


Figure 15.6 As described in the Sample Trade, Jenny raised her sell price as the stock climbed. Eventually, she sold the stock the day after it pierced a lower sell line.

Jenny printed out the price chart and examined the BARR in detail. She drew the trendline along the bottom, divided the length of it into four equal parts, and computed the lead-in height. Then she drew the warning and sell lines parallel to the trendline, each separated by the lead-in height. She computed the target price to which the stock was likely to decline. From the current price of 30, the target price was 23, a decline of almost 25%. Even though she still liked the stock, such a large decline made her nervous.

She looked back through the chart price history and searched for support zones so she could better gauge the area where any decline might stop. The first support area was in the 23 to 24 zone, where a prior advance had paused. Interestingly, that was also the predicted target for the stock. If the stock fell below support, she noticed a second, more robust support area between 20 and 22.

What of the possible reward? How high could she expect the stock to rise? Long-term price charts were no help as the stock was making new highs almost daily. Jenny shrugged because there was no way to determine where the rise would stop. Her only guess was that it might pause at 35, 40, or 45, price points where investors might decide to sell (round number resistance). Any one of those points could point the stock down, she decided. Even the current 30 level might be the highest price the stock would see.

After her analysis was complete, she was still confident that the stock held promise of additional gains. She decided to hang onto the stock. If the stock declined to the warning line, she would sell it. She placed a stop-loss order at 27.50, the current value of the warning line.

During late September and into the start of October, the stock followed the sell line upward. On 12 October, the stock jumped up again. After a week or so, Jenny was able to draw another sell line parallel to the original BARR trendline that intersected stock price. She decided that should the stock fall to the lower sell line, she would dump the stock. She raised her stop-loss order to 31.

The stock did not return to the lower sell line.

The stock reached a minor high of 34.38 on 19 October, then retraced some of its prior gains. It curled around and reached a low of 32.88 before turning around. Jenny printed out another price chart and

drew a new trendline. This line had a slope of about 60 degrees. She smiled as the BARR was performing exactly as predicted.

During the first part of December, price pierced the 60-degree trendline when the stock began moving sideways. Jenny suspected that the rise was nearly over, but one could never tell for sure until it was too late. She decided that should the stock decline below the latest sell line, she would close out her position.

The stock moved up again. A few days after Christmas, the stock reached a new high of 39.75 and Jenny was able to draw another sell line. During the next 2 weeks, the stock declined to the lower sell line, then rebounded to challenge its recent high. On 15 January, the stock peaked at 39.88, a smidgen below the 40 resistance number she estimated earlier.

To Jenny, the day looked like a one-day reversal, but she could not be sure. Taken together, the two highest points looked like a double top. The pattern was a warning, and it made her nervous.

Less than a week later, the stock declined below the lower sell line. Should she sell or hold on for additional gains? She looked back at the profit she had made so far and decided not to be greedy. She sold the stock at 36.75 on 22 January. The next trading day, the stock closed up 1.25 at 38, and she was crestfallen.

She continued to monitor the stock and watched it hesitantly move higher over the next 2 weeks. She tried to take solace in the large profit she achieved, but it was little comfort in the face of missed gains. Did she sell too soon? On 23 February, her question was answered when the stock dropped below her sell price, heading down.

Jenny watched the stock drop to 35 and find support at that level. Then, it continued moving down. In early April, the stock declined below the original trendline and she calculated the minimum target price of 31. This was reached within the week and the stock continued falling.

She turned her attention to other interesting patterns and forgot her trade until July 1994. By chance, she pulled up a chart of the company and was horrified to see that the stock had declined to a low of about 21, almost a 50% decline from the high.

16
Butterfly®, Bearish

RESULTS SNAPSHOT

Appearance: Looks like a big W with the location of turns governed by Fibonacci ratios.

Downward Moves

	Bull Market	**Bear Market**
Performance rank	4 out of 5	4 out of 5
Breakeven failure rate	27.3%	7.6%
Average drop	–13.0%	–20.2%
Volume trend	Downward	Downward
Point D reversal rate	86%	85%
See also	Bearish bat, bearish butterfly, bearish crab, bearish Gartley	

The bearish butterfly is a Fibonacci-based pattern whose turns are dictated by Fibonacci numbers. I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The above Results Snapshot shows a chart pattern that underperforms when compared to other Fib patterns. The average drop in bull markets is 13%, which is below the average drop of 15% for non-Fibonacci-based patterns. Both measure the drop to the ultimate low, but start from different points (Fibonacci patterns use the high at point D, and regular-based patterns use the breakout price).

Bear market patterns perform substantially better, with declines averaging slightly over 20%, but that's still short of the 22.2% average decline of non-Fibonacci-based patterns. That's an apples-to-apples comparison, but the butterfly was meant to predict a turn at point D and see price drop from there.

How well does that notion work? One measure shows that price turns down at D at least 85% of the time on average. So if you can find this pattern, you will know at what price the stock is expected to turn lower. That's invaluable information. We'll investigate how far down price is expected to drop in the Statistics portion of this chapter. Until then, let's capture a bearish butterfly and see what it looks like.

Tour

Figure 16.1 shows one example of a bearish butterfly chart pattern. After a strong move higher, which started in December 2018, price began forming the pattern at minor high X. A retrace followed that took price down to the second turn, A. Price recovered to B and that location was determined by a Fibonacci ratio of leg BA to XA.

After B, point C was another Fibonacci-based turn found by the retrace of leg BC to BA. We'll discuss that in more detail in the next section.

Wrapping up the pattern was point D, which used a Fibonacci extension of the BC move to find the turn. Price took a while to turn downward, but it did when it made a strong move lower to bottom at G. The recovery was quick, though, with price ending the day near the top of the price bar at G followed by an upward breakout at E.

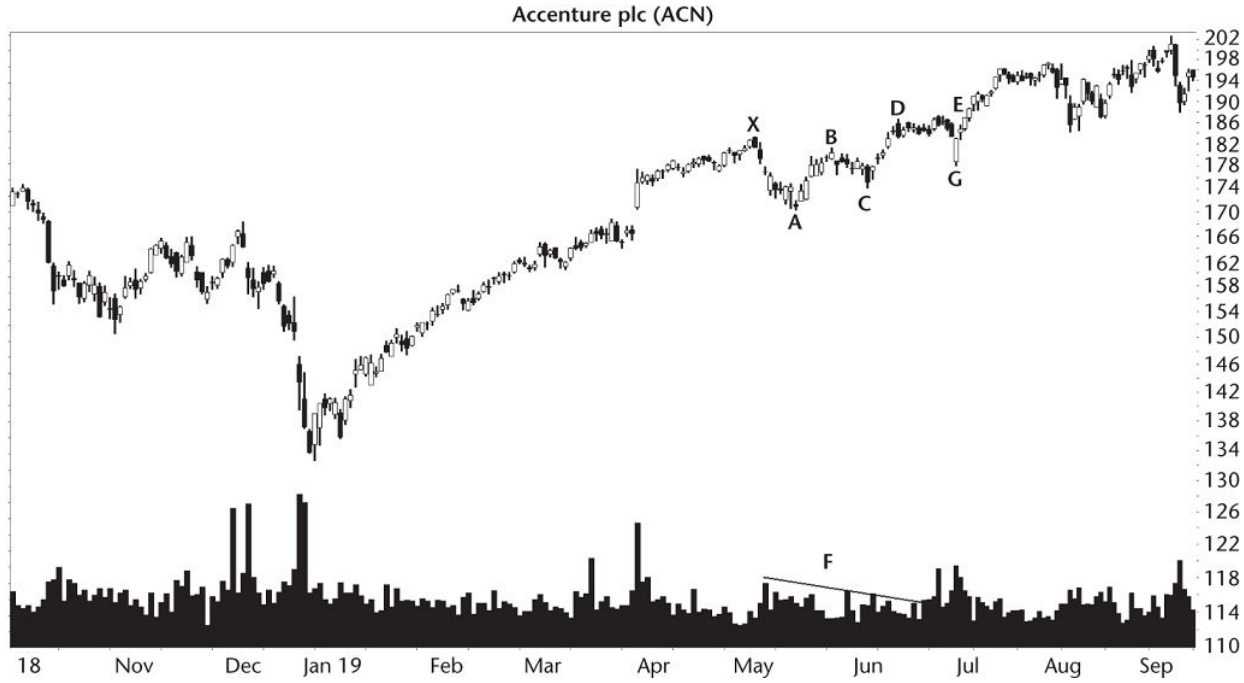


Figure 16.1 This bearish butterfly is really bullish. Price continues the upward trend.

Volume (F) trended downward as the chart shows, and that's typical for the pattern.

From a swing trader's point of view, this butterfly would be difficult to profit from by shorting the stock. The drop to G was just too fast. Of

course, this chart is just one example of a bearish butterfly, but it does serve as a warning that making money with this pattern could be more difficult than with other Fibonacci-based patterns.

Let's dig into the identification guidelines so we can spot butterflies in the bush.

Identification Guidelines

Table 16.1 shows the identification guidelines. Refer to Figure 16.2 for another example of a bearish butterfly. I show the butterfly pattern at turns XABCD. The stock drops from D like it's supposed to and makes a strong push lower, closing below the bottom of the pattern at E and staging a downward breakout. Unfortunately, price drops only 3% to F before beginning to recover. The stock wobbles on its way to G, where it busts the downward breakout.

For swing traders, the move after F isn't as important as the turn at D and the drop that follows. In fact, if you know when a downturn is likely to happen, then you can prepare (short the stock, buy protective puts on a long position, sell the stock outright, or just cower in the closet, biting your fingernails as your position starts losing money).

Appearance. The bearish butterfly loosely resembles a big W or a double bottom with somewhat tall sides on both ends and a twin bottom that won't share the same price. Some butterflies look like double bottoms, and some, like the one in Figure 16.2, resemble an ugly double bottom (that is, a double bottom where the right bottom, C, is much higher than the left one, A).

Table 16.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big W with the location of turns governed by Fibonacci ratios.
BA/XA retrace	The ratio of BA/XA is .786.
BC/BA retrace	The ratio of BC/BA is one of .382, .5, .618, .707, .786, or .886.
DC/BC extension	The extension of leg DC to BC is one of the Fibonacci numbers: 1.618, 2, or 2.24.
DA/XA extension	The ratio of DA to XA is 1.27.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

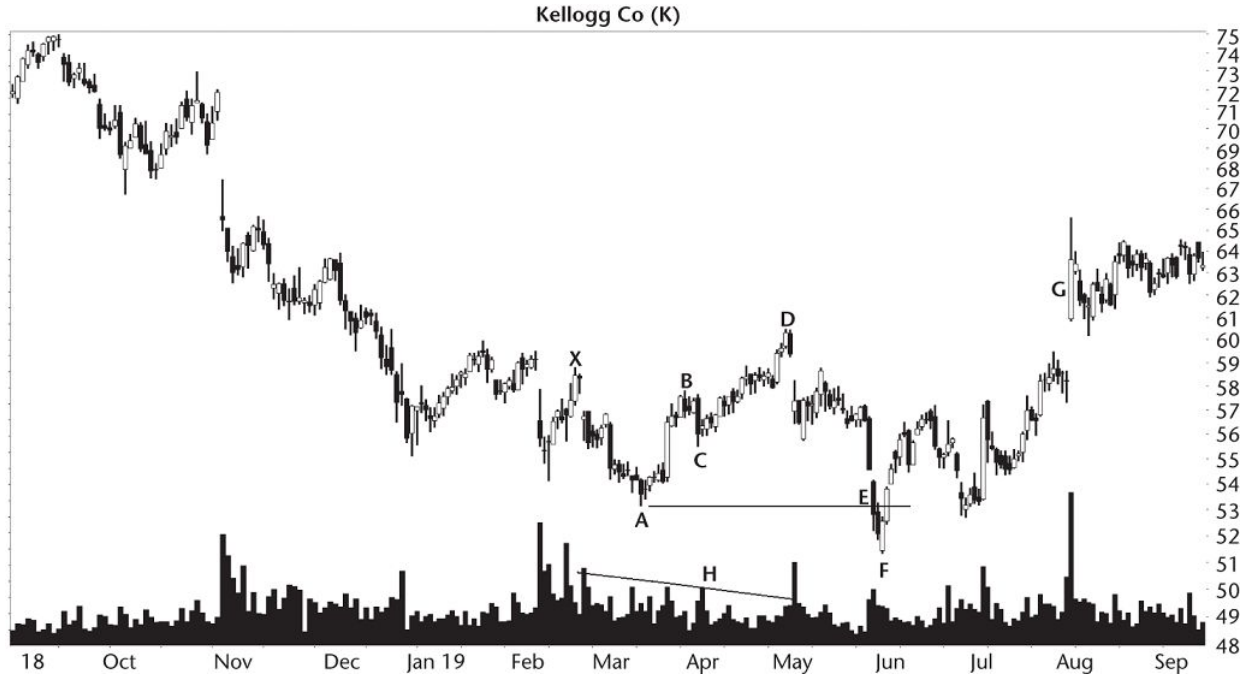


Figure 16.2 This bearish butterfly sees price drop from D and stall just below the bottom of the pattern.

BA/XA retrace. Locate point B by computing the Fibonacci ratio of leg BA to XA. Because this pattern is so complicated, I used the high–low price range of the last point (B) in the ratio. For example, X has a high price of 58.81, the low at A is 53.14, and the high–low range of B is 57.81 to 56.69. Using the high price of B, we get (57.81 – 53.14)/(58.81 – 53.14) or .82. Substituting the low price at B in the equation gives a number of .63. Because the range of .63 to .82 encompasses the target .786 Fibonacci retrace, the location of point B qualifies as valid.

Your software may use other algorithms for pattern recognition, so don't be surprised if your bearish butterflies are different from the ones you see in this chapter.

BC/BA retrace. In a similar manner, I qualify turn C. The ratio is governed by leg BC to BA. The high–low range of point C is 57.65 to 55.50. The result would be (using the high price at B and the low at C) (57.81 – 55.50)/(58.81 – 53.14) or .495. Using the high at C gives a value of .034. The .034 to .495 range must span one of the Fibonacci numbers listed in Table 16.1. It swallows the .382 value, so point C is fine.

DC/BC extension. You might think that for point D, I'd use the same method as in prior ratios. You'd be correct. The high–low range of point D is 60.46 to 59.64. The extension uses the high at B, low at C, and the D high–low range. That is, (60.46 – 55.50)/(57.81 – 55.50) or 2.15. Using the low at D gives (59.64 – 55.50)/(57.81 – 55.50) or 1.79. The range of 1.79 to 2.15 includes the Fibonacci number 2, so point D is valid, also.

DA/XA extension. I calculate the DA/XA extension differently. In this case, I use a 3% window (3% above to 3% below) the price of D to qualify a 1.27 Fibonacci number. We use the high at D, low at A, and high at X. Thus, we get (60.46 – 53.14)/(58.81 – 53.14) or 1.29. The 1.29 value must be within 3% of 1.27, which it is. This completes the dorking with Fibonacci ratios to qualify the pattern as valid.

Volume. Volume trends downward the majority of the time, as we'll see in Table 16.2. Do not disqualify a bearish butterfly just because volume trends upward, unless you feel like it. The volume trend is not a requirement of a valid butterfly, just an observation.

The volume trend in Figure 16.2 is downward (H), as measured between points X and D using linear regression. Often you can tell the volume trend just by looking at volume.

Duration. I limited butterfly patterns to six months or less, but that's an arbitrary limit I use for most chart patterns.

Focus on Failures

Figure 16.3 shows a bearish butterfly at turns XABCD. The butterfly is part of a rounded-looking turn (rounded bottom chart pattern), starting from the high at H. It's not a pretty turn because the bottom isn't as smooth as I like to see, but it's there. Regardless, the butterfly acts as a reversal pattern when it appears at the bottom of the turn.

Price rises to D, completing the pattern, and then turns downward at D, just as it's supposed to. Unfortunately, the drop from the high at D to the low at E measures just 3%. That's too small for most traders to feel good about shorting the stock (but how would they know ahead of time?).

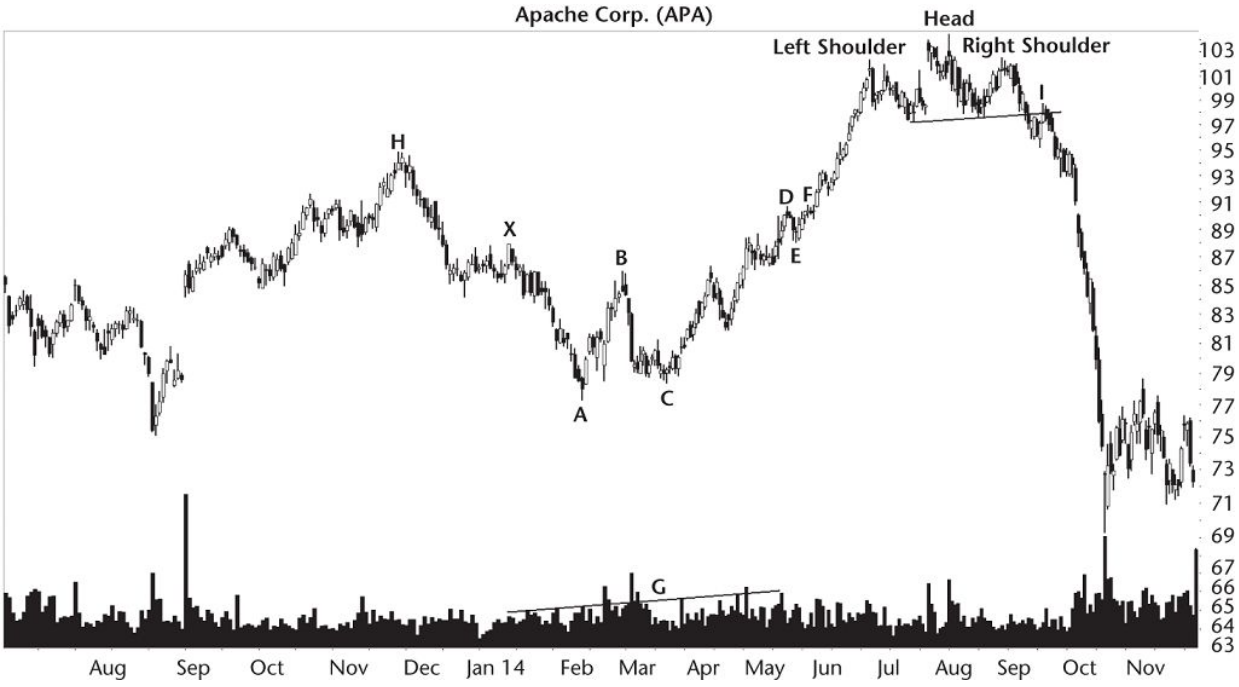


Figure 16.3 Price turned down at D but doesn't drop far when price continues rising.

The stock recovers and breaks out upward at F, staging an upward breakout of the butterfly pattern and seeing price soar to a new high. The rounded bottom completes and price rises about ten points above the high put in at H.

The stock forms a very pretty head-and-shoulders top as the chart shows. The pattern confirms as valid when price closes below the neckline (the near-horizontal line). A pullback at I allows traders a

small amount of time to recognize the bearishness of the head-and-shoulders top before the drop begins.

After the pullback ends, down the stock goes, plunging like a cliff diver into the October water.

If I were to short a stock, the drop from I is the kind of bearish move I would love to see, not the meager drop from D.

This bearish butterfly fails because price drops less than or equal to 5% from the peak at D. The meager decline is what I call a 5% failure.

As timely as the bearish head-and-shoulders is, a bullish double bottom appears at AC, signaling an upward move. Notice that C is slightly above A. You see that kind of behavior near the bottom of rounded turns where price reaches bottom and makes a determined push higher only to collapse and bottom just above where it started. In other words, that's the move from A to C.

Maybe the way to notice a potential butterfly failure is to look at the context of where the pattern appears. The rounded turn is a bullish chart pattern. Of course, there's no guarantee that the stock would complete the turn and continue upward. A rounded turn might form a second peak, opposite H, and create a double top when price tumbles. That's what I would have expected, and with a bearish butterfly in the way, I'd assume price would reverse at D.

If the bearish butterfly appeared a bit higher in the rounded turn, then that would have been a distinct warning of an impending decline. As the chart shows, that didn't happen. A check of the fundamentals (news, like earnings announcements) might shed some light on why the stock continued its march upward from the low at C.

So there you have it. This bearish butterfly fails to see price make a sustained turn lower at D, disappointing traders who may have shorted the stock near the D peak.

Statistics

Table 16.2 shows general statistics for the bearish butterfly.

Number found. I found 1,230 bearish butterflies in my home office. That came from 662 stocks with patterns found between August 1991 and August 2019. Not all stocks covered the entire range. And yes, that includes stocks that no longer trade (I know you've been wondering about that).

Table 16.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,013	217
Breakeven failure rate	27.3%	7.6%
Average decline after D	–13.0%	–20.2%
Volume trend	62% Downward	58% Downward
Performance Up/Down volume	–14% U, –12% D	–20% U, –21% D

Breakeven failure rate. The failure rate counts how many butterflies fail to see price drop more than 5% below the peak at D.

In bull markets, the breakeven failure rate is an impressive 27.3%. Wow. Compare that to the 7.6% rate for bear markets. I suggest you avoid trading this pattern in bull markets unless you have special sauce you can add to the stew to get this pattern to be more palatable to your portfolio.

Average decline. The numbers in the table say that for the best performance trading this pattern stick to bear markets. However, both bull and bear market numbers fall short of what non-Fibonacci patterns average.

Volume trend, performance. I used linear regression to determine the slope of volume and found it trends downward most often. The numbers are just above random. Even so, the performance benefit isn't much and you have to pay attention to the volume slope (upward in bull markets and downward in bear markets).

Trading Tactics

Some of the numbers already discussed compare the performance of the bearish butterfly with regular non-Fibonacci-based chart patterns. However, the focus for this pattern is really with the swing trader. They seek to short the stock at the end of the pattern (or sell a long holding). Here are some statistics that help define the performance at and after D.

Table 16.3 shows how price behaves after a bearish butterfly completes, using numbers, too! Isn't this exciting?

How often does price turn at D? One of the tenets of this pattern is that price will turn downward at D. The statistics in the table prove that's true nearly all of the time. A new question arises: How far does price drop after D?

How many drop to point ... ? I used the pattern's turns and tabulated how often price reached those turns. For example, I found that price dropped to point C between 38% (bull market) and 44% (bear market) of the time.

Table 16.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	86%	85%
How many drop to point A?	24%	34%
How many drop to point B?	76%	83%
How many drop to point C?	38%	44%

Hopefully, you can use these locations to help gauge where price will turn upward and give you a clue when to close out a trade (short sale) or maybe enter a new one (long side).

Before making a trade using this chart pattern, we see from Table 16.2 that the average decline in bull markets is 13%. You might compare that to the location in your butterfly to see where it matches with the XABC turns (measure 13% down from the peak at D). Then use Table 16.3 to look at the probability of the stock dropping to that turn. You'll have to make an evaluation if the reward is worth the risk of a trade.

Sample Trade

Figure 16.4 shows a trade Susan made using a bearish butterfly.

Figure 16.4 Susan decided to trade this bearish butterfly.

The butterfly is at XABCD on the chart. She didn't care to short the stock at D. She's not that experienced, and the profit potential wasn't appealing to her anyway. How did she weigh the profit potential? She used Table 16.3 as guidance and suspected price wouldn't make it down to A (just 24% do).

She watched the stock drop from D to break out downward at E and coast lower to F. The stock bounced and made a second low, a higher low, in late August.

Then it was off to the races when price climbed and reached G. Why was G important? I asked her. “Because the drop from A [the bottom of the butterfly] to F was less than 10%. A close above the top of the pattern at G busted the downward breakout. Busted patterns can produce outsized gains. But only if Mars is in alignment and it's a full moon.” She reached over and rested her hand on my arm. “I'm just kidding about that last part.”

Susan bought the stock a day after G and received a fill at the opening price of 39.82.

She didn't have a target in mind. Rather, she wanted to make as much as possible on the trade, preferring to let the stock speak to her. It would let her know when it was time to get out. I know, that didn't make a lot of sense to me, either, but when she started talking about astrology and the alignment of the planets, I tuned her out.

The stock really didn't cooperate at the start. It rounded over and retraced, but that was typical for a stair-step move higher. It didn't frighten her out of the stock. She had hoped that the continuation (or breakaway) gap shown a few days before G would provide support. And it did.

“Whew!” she told me. “I put a stop at 36.63, below the gap.” On the chart, I show at H the little nubbin under which she tucked her stop.

Once the retrace finished, the stock started moving higher again, leaving behind a pattern called an inverted and ascending scallop (the arc at H).

Price continued higher, forming another scallop at I, and then a third at J. She recalled reading in one of my books about scallops, how as they appear higher in the price chart, they tend to get shorter and narrower. When three stack up showing those traits (in the same uptrend), a trend change is more likely.

For grins, she computed the retrace of each scallop and found that the first one measured 38% (H), scallop I came in at 47%, and J was at 48%. In other words, price was retracing more each time the scallop appeared higher in the price chart. That was additional evidence that price was going to reverse.

Did it reverse? Not immediately. Price was a firework rising from L to K in a straight-line run-up. Then it began backtracking. Despite the run-up, she expected the stock to turn lower, based on the three-scallop pattern signaling an end of the upward run. Plus, Mars was in alignment with Las Vegas or something.

She set a retrace of 50% (of the L to K rise) as her exit price. She reasoned that if the stock really wanted to climb again, it would turn higher before retracing 50%.

She placed a sell order at 52.75 and that filled at M. On the trade, she bought at 39.82, sold at 52.75, and made almost $13 a share or 32%.

If she traded the busted butterfly perfectly, she would have bought at 39.51 (a penny above D), and sold at the high, 57.32 (K), for a gain of 45%.

She called me on the phone and yelled, “Party time! I get along great with Capricorns. Let's go.”

I asked, “Mom, is that you?”

17
Butterfly®, Bullish

RESULTS SNAPSHOT

Appearance: A five-turn pattern governed by Fibonacci ratios, often looking like a big M.

Upward Moves

	Bull Market	**Bear Market**
Performance rank	2 out of 5	5 (worst) out of 5
Breakeven failure rate	11.4%	2.6%
Average rise	39.5%	27.8%
Volume trend	Downward	Upward
Point D reversal rate	91%	88%
See also	Big M, double tops, bullish crab, bullish bat, Gartley	

The bullish butterfly is a Fibonacci-based pattern that depends on price turning upward at the end of the pattern. Fibonacci-based patterns are ideal for swing traders who make money in the short term as price rollercoasters.

I measured performance of Fib patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

When compared to other non-Fibonacci-based patterns, the above Results Snapshot shows below-average performance for the move after turn D. Failure rates are lower, though, including the delicious 2.6% rate of those failing to see price rise more than 5%. That's exceptionally low (ranking in first place, by the way). It suggests price forms a trend long enough for swing traders to make a profit.

Let's take a tour to see what the pattern looks like.

Tour

Figure 17.1 illustrates a good example of what a bullish butterfly looks like and how it's supposed to behave. I show the butterfly as points XABCD. Price begins a downtrend at F that leads to the start of the butterfly at X. Price bounces up to A in a short move higher, drops just as fast down to B, retraces a portion of the AB move on the way to C, and completes the pattern at D. Volume (E) trends upward in this example.

What I find odd about this butterfly is how compact it looks. Usually the turns are more spread out, but not this time. It's as if the bulls and bears were yanking each other around for control of the stock.

Price bottomed at D and then took off, rising in short order to G. That wasn't the ultimate high, though. The stock found the ultimate high in June 2014 at a price of almost 27 for a potential gain of 50% above the low at D.

If you were a swing trader and butterfly catcher, you had just a few days to buy into the stock after the D bottom before price zipped higher. If you'd planned to sell at the top of the pattern (A), you'd have missed out on a nice and fast move to G.

Let's learn how to find bullish butterflies without going to the zoo.

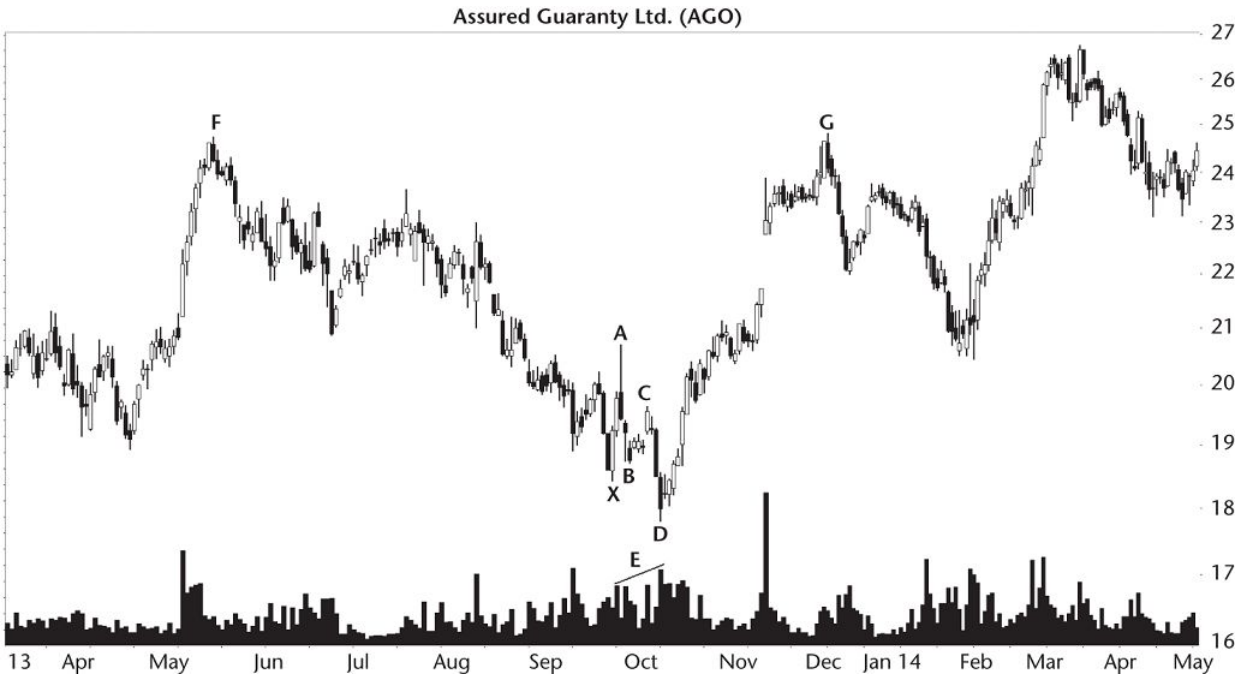


Figure 17.1 This bullish butterfly leads to a fast recovery.

Identification Guidelines

Table 17.1 shows identification guidelines for the bullish butterfly. Refer to Figure 17.2 as I walk you through how my software identifies the patterns. This butterfly (shown as turns XABCD) breaks out downward at F when price closes below the bottom of the pattern. However, a swing trader wouldn't worry about that. They would be timing the entry at D and riding the stock upward, trying to capture as much of the rise to G as possible.

Table 17.1 Identification Guidelines

Characteristic	Discussion
Appearance	Five turns are governed by Fibonacci ratios.
AB/AX retrace	The Fibonacci ratio should be .786.
CB/AB retrace	The ratio should be one of the Fibonacci numbers: .382, .5, .618, .707, .786, or .886.
CD/CB extension	The extension of leg CD to CB is one of the Fibonacci numbers: 1.618, 2, or 2.24.
AD/AX retrace	The ratio of AD to AX is 1.27.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for many chart patterns.

Figure 17.2 This bullish butterfly is at XABCD and has a downward breakout, but the rise after D is still decent for a swing trade.

Appearance. A perfectly looking bullish butterfly might remind you of a creature with two wings, the first wing being highlighted by lines connecting turns XAB (and back to X) and the second wing by lines connecting BCDB. They join a body at B. However, in the real world, you'll see some mutant butterflies.

The various turns in the bullish butterfly are governed by Fibonacci ratios. Let's go through each one to show how I find them.

AB/AX retrace. I use the ratio of the various turns to see if the result is near a Fibonacci number. In these computations, I use the high–low value of the last point. You'll see what I mean.

The low price at X is 19.40, the high at A is 29.05, and the high–low range at B is 22.19 to 20.94. The AB/AX ratio becomes, using the low at B, (29.05 – 20.94)/(29.05 – 19.40) or .84. Using the high at B, we get (29.05 – 22.19)/(29.05 – 19.40) or .71. The span of .71 to .84 encompasses the .786 target Fibonacci number (from Table 17.1), so B is a proper turning point for the pattern.

CB/AB retrace. Similarly, I find the CB retrace of AB, using the high–low range of C (26.96 to 25.62) and the high at A, low at B. Plugging the high at C into the equation, we find (26.96 –

20.94)/(29.05 – 20.94) or .742. Using the low at C, we get (25.62 – 20.94)/(29.05 – 20.94) or .577. The range .577 to .742 must span at least one of the numbers listed in Table 17.1. Two numbers qualify, .618 and .707, so turn ABC qualifies as valid.

CD/CB extension. I find the extension the same way, using the high–low range of the last point (point D in this case). D has a high price of 18.47 and a low of 17.01. Plugging in the numbers gives a span of 1.41 to 1.65. The 1.618 number squeezes into the range, so we found point D.

AD/AX retrace. Because Fibonacci-based patterns are so complicated, I use the high–low range as discussed to qualify the turn, except for AD/AX. For this ratio, I use a 3% window. I use the high at A, low at D, and low at X in the formula, which gives a value of 1.25, which is within 3% of 1.27. Thus, we have a valid bullish butterfly whose turns come close to the Fibonacci numbers listed in the table.

Volume. We'll have a report on volume later in the Statistics section, but volume trends downward most often as measured from the start of the pattern (X) to the end (D). That's in bear markets. The volume trend in bull markets is about random.

Duration. I limited patterns to 6 months or less, but that's an arbitrary limit.

In this example, the stock climbed after turn D, as predicted, but only made it up to G before reversing. We'll discuss statistics later to see if we can better gauge how far price might climb after the pattern ends. Stay tuned.

Focus on Failures

Figure 17.3 shows a bullish butterfly with its five turns, XABCD as shown. In a violent reversal at F, the stock formed a needle-sharp V-top chart pattern and plummeted to find footing at X, the start of the butterfly. Price, in a series of undulating waves, climbed to A before another selloff ensued. That selling carried price down to B. Another recovery and selloff dropped the stock to D.

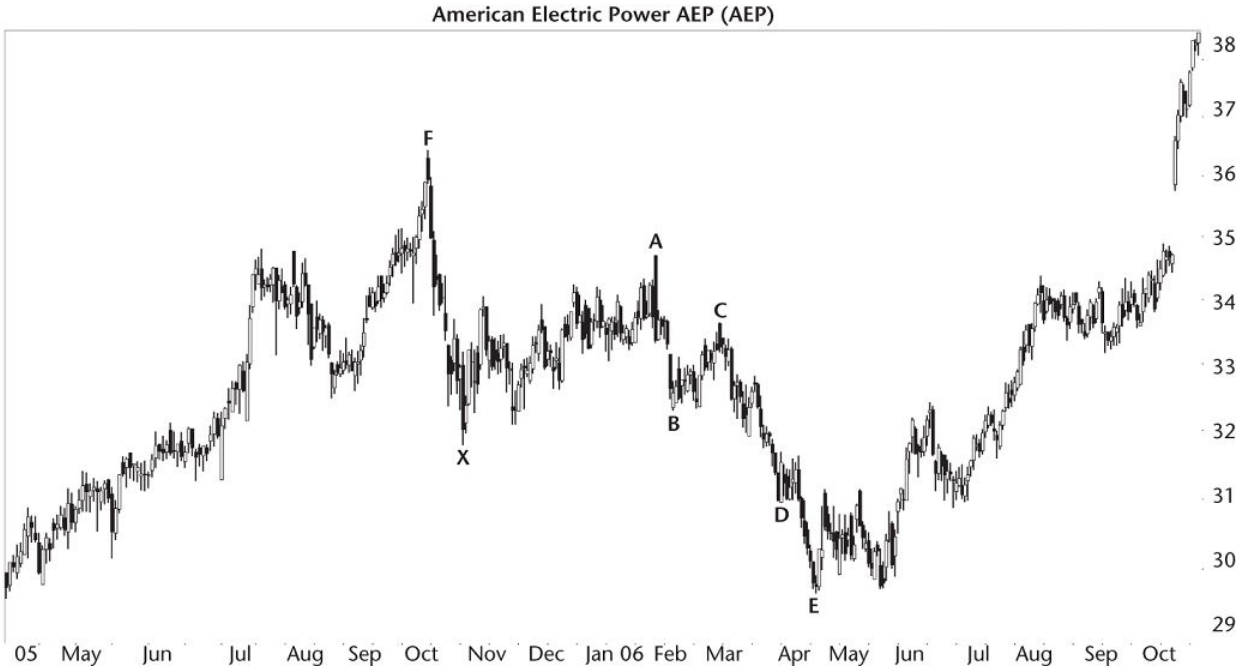


Figure 17.3 This bullish butterfly fails to see price turn higher after D.

Swing traders wishing to participate in the recovery may have bought during the week after D. They had plenty of time as the stock slid sideways and made a nice tight knot of support. Volume, not shown, moved sideways from X to D, with no outstanding peaks that would hurt the feet of anyone stepping on it.

The key to the failure of this pattern is what happened at D. I didn't check for news, but when the stock broke downward through support, that was the exit signal for those who bought at D and hoped to see price climb.

The plunge to E was a straight-line affair that had an even faster recovery (back up to the price of D). The support at D, now resistance,

repelled the stock and forced it back down. It took two more tries to break through the ceiling set up by that knot of resistance.

Those who bought at D in anticipation of a rise were disappointed. Perhaps you heard their screams when they sold for a loss. If they'd held on, they would have been rewarded when the stock began its recovery in May.

Unfortunately, being rewarded for breaking the rules is one of the struggles newbie traders have to overcome. If they broke their own rules and held on as price dropped, only to be rewarded during the recovery, they might be tempted to hold on too long the next time. And that's how a bad habit forms, one that will drain their wallet or purse as sure as the sun rises the next day, when the stock drops and stays down.

The utility stock climbed to 48 in 2007 before the bear market came along and delivered a knockout punch to stockholders.

Returning to the turn at D, fortunately this type of behavior for many Fibonacci-based patterns is rare. Price *does* turn upward at D, nearly all of the time. For the bullish butterfly, that means at least 88% of the time. Accompanied by a low failure rate, capturing the upward move from a bullish butterfly might be a good tool for swing traders to have in their toolbox.

Let's crunch the numbers and see what they reveal about the behavior of bullish butterflies.

Statistics

Table 17.2 shows general statistics for the bullish butterfly.

Number found. I found few patterns, a total of 882 (in both bull and bear markets). I dug them up in 601 stocks from July 1991 to June 2019. Not all stocks covered the entire period, and some no longer trade.

Breakeven failure rate. The failure rates for the bullish butterflies are low, especially in bear markets. Why the failure rate is so low is a mystery. The bear market should be sucking price lower even as price climbs upward after turn D. You'd think that a count of patterns failing to gain more than 5% of altitude would be high, but it's not.

A check of the spreadsheet shows everything in order. There were 152 patterns involved in the computation, which is short of the 173 bear market samples. That's because the remainder didn't turn upward at D (they continued lower) and so are not counted. Perhaps the dearth of samples is the reason for the low failure rate.

Average rise after D. The table shows the average rise as measured from the low at D to the ultimate high. The ultimate high is the highest high before price tumbles by 20% or before the stock closes below the low at D.

Even though the numbers are below average compared to non-Fibonacci chart patterns, they are high enough for short-term-minded swing traders.

Volume trend, performance. In bull markets, the volume trend is about random. In bear markets, the pattern has an upward volume trend. That's a bit odd because most chart patterns see volume recede.

Bull market performance is probably not statistically significant, but the bear market numbers show a wide performance difference. Samples are few, 77 for up volume and 75 for down, giving a six-percentage-point performance spread between 31% and 25%. In short, in bear markets, look for upward-trending volume for the best performance.

Table 17.2 General Statistics

Description	Bull Market	Bear Market
Number found	709	173
Breakeven failure rate	11.4%	2.6%
Average rise after D	39.5%	27.8%
Volume trend	52% Downward	65% Upward
Performance Up/Down volume	40% U, 39% D	31% U, 25% D

Table 17.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	91%	88%
How many rise to point A?	39%	15%
How many rise to point B?	79%	69%
How many rise to point C?	49%	31%

Trading Tactics

A bullish butterfly is for swing traders who can use the Fibonacci ratios to calculate the price where turn D will appear. Then they can wait to buy when the turn is in place. After that, all they have to do is sit back and collect their money as it tumbles in. Okay, so it's not really that easy. How easy is it? The following may answer that question.

Table 17.3 describes the behavior after the pattern ends.

How often does price turn at D? If price doesn't reliably turn at D, then traders are wasting their time chasing butterflies. However, the bullish butterfly doesn't disappoint. The average stock will turn upward at D at least 88% of the time. However, once they turn, how far does price rise?

How many rise to...? I mapped the rise for each butterfly and compared it to turns A, B, and C. For example, I found that for those making the turn at D, the stock climbed to A 39% of the time in bull markets and 15% of the time in bear markets. Point A, as you will recall, is at the top of the butterfly.

In bear markets, you'd expect the stock to struggle to reach the top of the pattern. In bull markets, with the market current pulling the stock upward, price is more than twice as likely to reach A than in bear markets. The remainder of the table shows how often price rises to the other turns.

Sample Trade

Figure 17.4 shows a trade Mary made using a bullish butterfly. The pattern's turns are labeled XABCD, as you might expect. Her pattern-finding software found the pattern for her within a week after turn D.

Volume trended downward (E) throughout the pattern, but the trend wasn't significant to performance in bull markets.

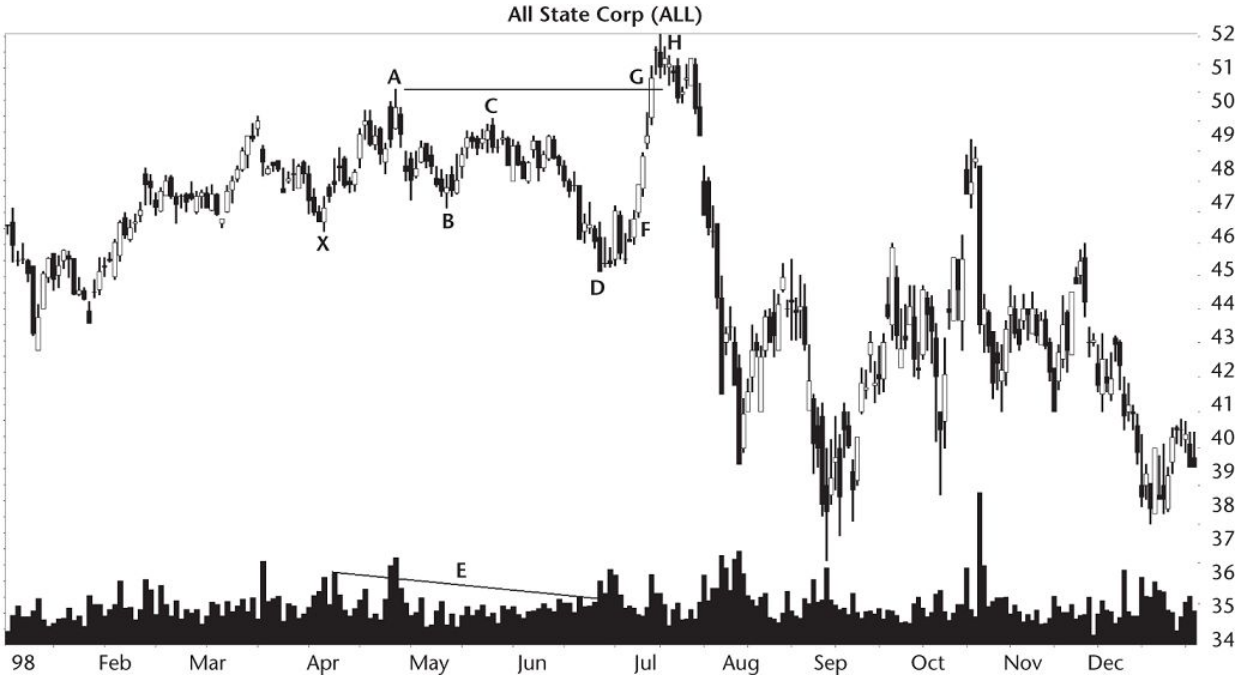


Figure 17.4 Mary traded this bullish butterfly for a quick 12% profit.

"I did my homework on the stock and liked what I found." At F, she bought at the open and received a fill at 45.19.

The stock cooperated and didn't just move higher, it became a rocket. Price day after day formed higher highs and higher lows.

When the stock reached the top of the pattern, she knew it might stall there and form what's called a 2B pattern (it's not covered in this edition). A 2B pattern happens when price makes a new high but fails to follow through, meaning price doesn't rise far above a prior peak before reversing. If price drops far enough, it'll form a double or triple top. At other times, price will retrace a bit and then try for another high.

In this case, with the stock moving up so fast, she placed a trailing stop a penny below the prior day's low. After three consecutive days of higher highs and higher lows, the technique is a good method to exit near the end of an uptrend.

At line G, when price reached the high of A, she starting using the trailing stop. It took her out of the stock on the day the stock peaked, H, but her stop was at 50.62 (a penny below the prior day's low). On the trade she made $5.43 a share for a 12% gain in 10 days. On an annualized basis, that's over 400%.

“Very nice,” she said. “To celebrate,” she told me, “you can buy me dinner.”

18
Cloudbanks

RESULTS SNAPSHOT

Appearance: Years of overhead resistance form a flat base followed by a significant decline.

Upward Breakouts

	Bull and Bear Markets
Reversal or continuation	Long-term bullish reversal
Performance rank	None
Breakeven failure rate	0%
Average rise	386%*
Percentage meeting price target	86%
See also	Diving board

* This is measured on the monthly scale from the lowest low to the lower of the bottom of the cloudbank or as high as the stock has recovered so far.

This chapter has a different format than other chapters in this book due to the nature of the cloudbank pattern. Cloudbanks are best for people who buy-and-hold for years, not for shorter-term swing traders who enjoy being stopped out (that is, who use stops). Because a monthly scale is used to measure performance for cloudbanks, I do not provide a rank (rank for other chart patterns is based on the daily scale, so any comparison is an apples-and-oranges thing).

How many times have you switched to the monthly scale and searched for chart patterns? You'll see some of your favorite patterns on the longer term scale: double tops and bottoms, a few triangles, and maybe this pattern: a cloudbank. If you like to invest, it might be a pattern worth finding. It's one of my favorites.

Tour

Figure 18.1 shows what a cloudbank looks like, shown on the monthly scale. The base of the cloud forms from 2003 to 2008, although the actual price trend isn't as flat as the horizontal line indicates. Indeed, price wobbles up and down during the period, yet there's a horizontal component to that movement as price slides sideways. That sideways move is what you're looking for when searching for cloudbanks.

After price starts dropping in the bear market, it tunnels through support and down it goes, following the rest of the market lower. This stock held up better than the market indices. The bear market started in October 2007, and this stock held on until September 2008 before the plunge really started. Both the stock and the general market bottomed in March 2009 when the bear market ended.

A recovery began, following the start of a bull market. In this example, the rise was swift, taking the stock back into the clouds just four months after bottoming. The stock bottomed at 40.87 and reached the cloud base of 67.05 for a gain of 64%. That's a nice recovery. If you only captured half that, the gain would still be a nice prize.

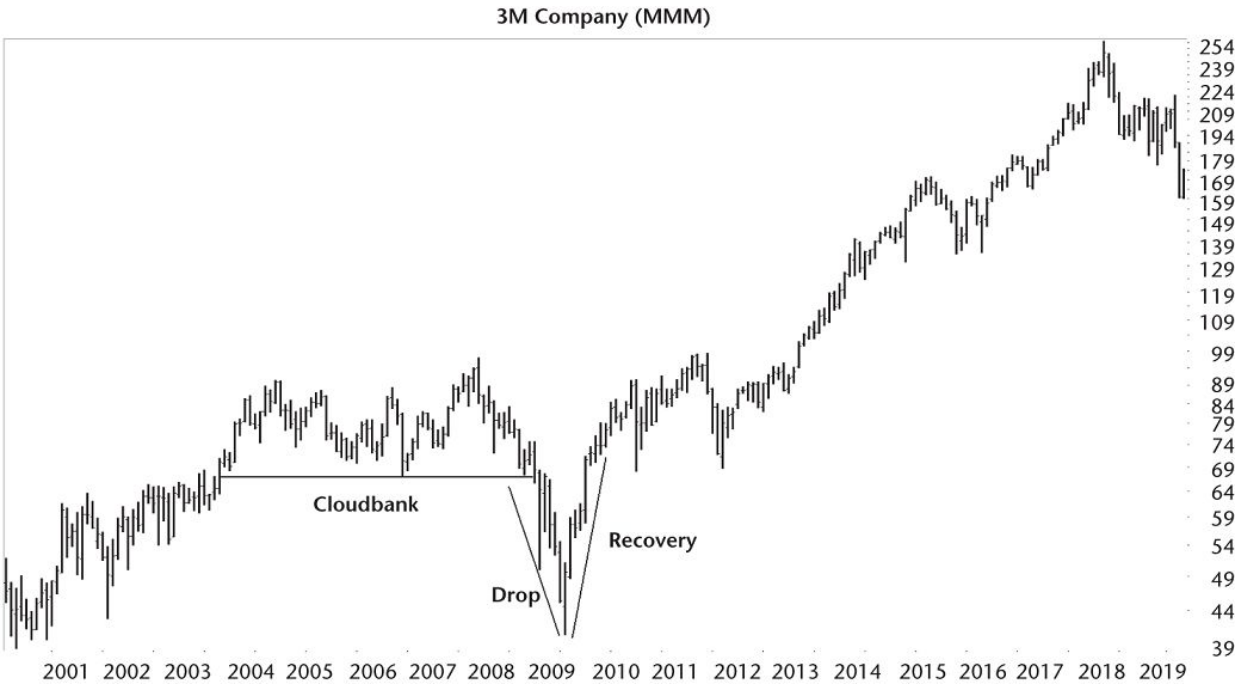


Figure 18.1 A cloudbank lasts for years until the 2007–2009 bear market takes price down.

Such large gains are typical for cloudbanks, which is why I like them. The average rise is 386%. Now that's tasty! Unfortunately, it measures from the lowest low to the bottom of the cloudbank (a perfect trade) or to the highest high until the end of data. The huge gain suggests there's money to be made trading clouds if you're willing to hold on and tolerate the risk.

Identification Guidelines

Table 18.1 shows the identification guidelines for cloudbanks. Refer to **Figure 18.2** as I discuss them.

Appearance. Use the figures in this chapter as guidance, but you're looking for price to slide sideways for years before a steep plunge.

Scale. Finding cloudbanks on the historical scale is easy. Switch to the monthly chart to locate them. Figure 18.2 shows two cloudbanks, A and D. Notice that each price bar represents a month, so there are 12 bars to a year. This scale allows you to find these long patterns, which often stretch for several years before the big drop happens.

Cloudbank. Cloudbank A has a nice rounded top, like traders build a geodesic dome. The bottom of the pattern rests on support, which I show as a horizontal line. This example looks compact and tidy, but consider cloudbank D. The shape of the cloud is irregular and more typical of the cloud pattern. Price rests on support, shown by horizontal line D. Clearly D is not an ideal example.

Table 18.1 Identification Guidelines

Characteristic	Discussion
Appearance	A layer of resistance often years long precedes a significant decline. The pattern looks like a bank of storm clouds looming far above price.
Scale	Use the monthly scale to find cloudbanks because these patterns often last for years.
Cloudbank	Look for a sideways move that's years long (a common support area). The top of the cloud can be uneven, and the bottom can have lots of gaps where price doesn't touch a horizontal line.
Plunge	Look for a *minimum* drop of 40%. The larger the drop, the higher the potential for a rewarding profit. Often this drop is swift (but still lasting several months), a straight-line drop down. After such a straight plunge, look for a swift, V-shaped recovery. In a bear market, expect the bottom to be 60% to 70% below the cloudbank.
Events	Check company news to see if any significant events are responsible for the stock's drop. Is it a one-time event or more systemic? This applies mostly to cloudbanks outside of bear markets.
Bear market	Many cloudbanks appear before and during a bear market.
Recovery	Recovery should occur at the start of a bull market (if you can tell when that is). Watch other stocks to see if the market is starting to move higher, discounting bad news and perking up on good news.

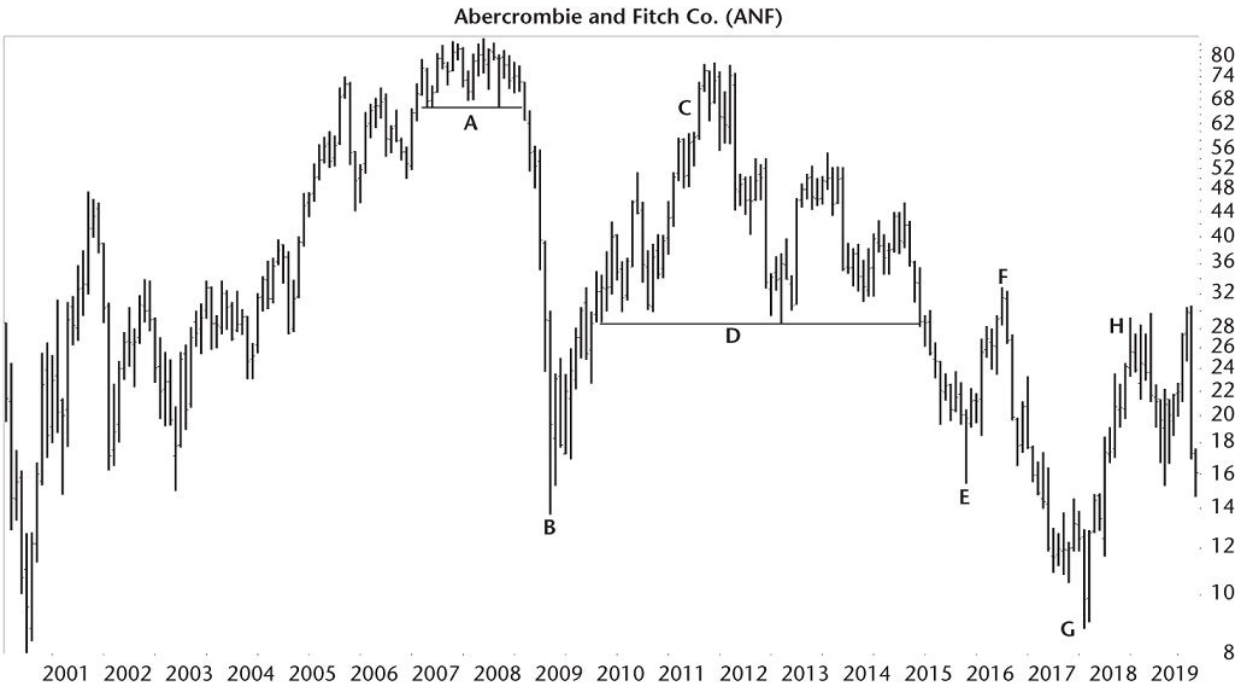


Figure 18.2 Two cloudbanks appear on this chart (A and D), with the first one leading to the 2007–2009 bear market.

Consider the cloud base as the normal price of the stock. The big plunge that happens after the cloud represents an anomaly. The cause might be a bear market, or it might be something else (like disappointing earnings). You want to be sure (as much as you can, anyway) that the stock will recover back to the cloudbank. If the cause is a bear market, then a bull market should turn things around and support the stock as price recovers.

Plunge. The stock makes a large drop (bottoms at B, E, and G). The drop is often swift, taking price down substantially. I use a 40% *minimum* drop because I want to make a large gain on the recovery. I discard clouds with drops less than 40%.

Look at the drop from A to B. In the 2007–2009 bear market, price takes about half a year before it hits bottom at B. Then it takes over two years to recover to the base of the cloudbank (C).

After cloudbank D, the stock bottoms at E and returns to F. I don't consider E to be the bottom of this pattern, even though it represents a drop of 46%. It just looks like F is a “pullback” (which is a chart pattern) before the downward move resumes.

The stock makes a lower bottom at G, and it looks to take as much time to return to H (from G) as the EF recovery.

Events. If the markets are not bearish, then you'll want to check news on the stock. Find out why the stock is dropping. For example, Toys-“R”-Us had problems competing with internet retailers and a large debt load that prevented them from updating their stores. They declared bankruptcy, so a cloudbank trade could have led to disaster.

GameStop suffered because people can download games without having to visit their brick-and-mortar stores. They make big bucks from used games, but digital downloading of games is jeopardizing those fat profit margins.

Stamps.com suffered after losing an exclusive contract with the US postal service.

These companies may not recover, so even if they show a cloudbank, the risk of continued losses suggests avoiding taking a position.

Bear market. When I discovered the cloudbank pattern in early 2010, I thought it was just a quirk of one bear market. Indeed, the 2007–2009 bear market has many cloudbanks, but as this chart shows, clouds also appear outside of bear markets. The stocks stage their own bear market (outside of the indices).

Recovery. If the indices continue making lower lows, there's a good chance that your stock showing a cloudbank will drop, too. So don't be in a hurry to buy. You may be able to make a purchase at a lower price.

Having said that, most cloudbanks (63%) lead to a V-shaped recovery (17% are double bottoms, 12% are ugly double bottoms, and 8% are horizontal, to round out the lot), so waiting on the sidelines to buy means less risk but also potentially lower profit.

Focus on Failures

How do cloudbanks fail? Two ways: Price doesn't return to the bottom of the cloudbank, or even if it does, it takes too long to get there. Perhaps the most dangerous mistake traders make is buying too soon, before price has bottomed.

Figure 18.2 shows an example. The bottom of cloudbank D is at 28.64 and the stock bottoms at 15.42 (E), for a drop of 46%. That exceeds the 40% minimum drop for cloudbanks. If you were to wait for price to close above a 4-month simple moving average, you'd have bought into the stock at 21.26 the following month (first open in October). Ride the stock back up to the cloud, and you'd make almost 35%. That's not bad, but it pales to buying in at 12.73 (two price bars after G) and riding it back up to 28.64, for a gain of 125%. Of course, the G entry requires perfect timing, so don't be fooled. Finding the entry isn't easy.

Figure 18.3 shows a cloudbank nightmare unfolding. During July 2009, the company reverse-split their stock, combining twenty shares in return for one. That's why the price on the right of the chart is so high. At B, the stock bottomed and I show an inset of the price bars.

Not shown, but a 4-month simple moving average would have triggered a buy at the close of bar A. If you bought at the open the following month, you would have received a fill somewhere near 27.60. Two months later, you'd be staring at price hitting a low of 8.22 (C), for a potential loss of 70%. Wow.

The stock recovered and has climbed to a high of about 67.50. That's a nice return of 145%, but it's a far cry from the bottom of the cloudbank (998.20) for a potential gain of 352%.

It's been a decade and price hasn't climbed close to the cloudbank.

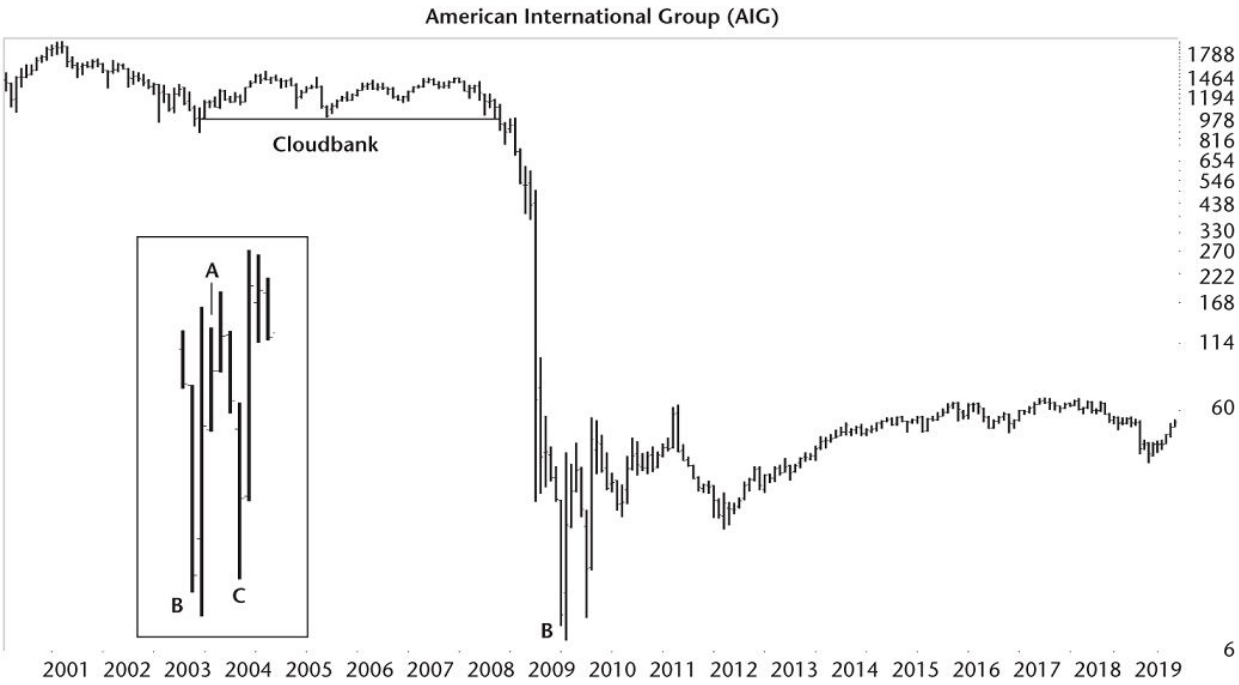


Figure 18.3 Price fails to recover after the bear market plunge.

Table 18.2 General Statistics

Description	Average	Median
Number found	439	N/A
Cloud duration	2.8 years	2.2 years
Drop from cloudbank to lowest low	68%	67%
Drop for those that recovered to the cloudbank	66%	64%
Drop for those that did not recover	82%	86%
Number recovering to cloudbank	86%	N/A
Number climbing above cloudbank top	64%	N/A
Time to cloudbank	1.7 years	1.1 years
Time through the cloudbank	2.8 years	1.9 years
S&P 500 change	47%	36%
Rise for those reaching cloud base	362%	178%
Rise for all cloudbank patterns	386%	178%
How many change trend?	99%	N/A

Statistics

Table 18.2 shows statistics for cloudbanks. I found cloudbank patterns in 371 stocks from January 1991 to October 2018. Let's go through the stats one at a time.

Number found. My hunt for cloudbanks found 439 patterns using the monthly scale only. The number isn't an average, even though it's in the average column in the table.

Cloud duration. The patterns I found are long, lasting almost three years (as measured from the start to before the big plunge) on average.

Drop from cloudbank to lowest low. The lowest low is point B in Figure 18.3. For stocks that had price return to the cloudbank, it was the lowest low between the end of the cloud and the date the stock returned to the cloudbank. For those stocks not returning to the cloud, I used the lowest low to end of data (most of the time; sometimes price came close to returning to the cloud, so I used the low between that point and the cloud end).

The average drop from the base of the cloud to the lowest low was 68% in the stocks I looked at.

Drop for those that recovered/did not recover to the cloudbank. I measured the drop from the base of the cloudbank to the lowest low. For those stocks that saw price return to the cloud, the drop (cloud to lowest low) averaged 66%. For those that did not return (or haven't yet), the drop was larger, 82% on average. Thus, *if your stock has an unusually large drop (anything above 66%), you might want to avoid trading the cloudbank* unless other stocks are showing similar drops.

Number recovering to cloudbank. Most (86%) of the stocks I looked at showed price returning to the cloudbank. The others, like AIG (Figure 18.3), have run out of data before making the return trip.

Number climbing above cloudbank top. For those stocks in which price has returned to the bottom of the cloud, just 64% have pushed their way through overhead resistance and poked out above the top of the cloud.

Time to/through cloudbank. Here's an interesting statistic for clouds. It takes longer to rise through the cloud (2.8 years) than it does to move from the lowest low to the cloud base (1.7 years). Once price reaches the cloud, sell, and look elsewhere for another trade.

S&P 500 change, rise for those reaching cloud base. The rise for stocks returning to the cloud averages 362% or a median of 178%. That compares to a rise of 47% and 36%, respectively, for the S&P over the same hold time. This measures from the lowest low to the bottom of the cloudbank. Keep in mind that you won't be buying in at the lowest low, unless you time it perfectly, so your results will average far less than 362%.

Rise for all cloudbank patterns. I measured the rise from the ultimate low to the lower of the bottom of the cloudbank or the peak before end of data. The stock may have moved higher. Indeed, one stock climbed from an ultimate low of 55 cents to $483.86 for a gain of 87,875%. Other stocks showed outlandish recovery prices, too, so I limited the upside to the bottom of the cloud. The table shows what I found.

How many change trend? This is a count of how many cloudbanks see price rise more than 20%. Nearly all of the patterns qualify, perhaps due to the monthly scale and how far price rises to the ultimate high. I measured from the lowest low to the lower of the bottom of the cloudbank or as high as the stock has recovered so far.

Table 18.3 Frequency Distribution of Time to Return to Cloud Base

Years:	**.5**	**1**	**1.5**	**2**	**2.5**
Return	21%	27%	17%	9%	6%
Cumulative	21%	48%	65%	73%	79%
Years:	**3**	**3.5**	**4**	**4.5**	**5**
Return	3%	2%	4%	4%	7%
Cumulative	83%	84%	89%	93%	100%

Table 18.3 shows a frequency distribution of those cloudbank trades that saw price return to the base of the cloud. For example, 21% of the patterns returned to the bottom of the cloud within 6 months.

Another 27% took a full year to make the trip. By the end of the third year, 83% had completed the journey.

Volume. I don't show a table of volume statistics because there's not much to tell. I found the average volume in the cloudbank (pattern start to end), in the drop leading to the lowest low (after pattern end to month before the lowest low), and at the lowest low (using the average of the one month). In 80% of the cases, volume was higher during the drop than during the cloudbank.

When price bottomed at the ultimate low, just 44% of the time, volume was higher than during the cloudbank or subsequent drop. In other words, volume doesn't give a reliable clue when the stock might turn upward for a sustained recovery.

Trading Tactics

Table 18.4 shows trading tactics. The sample trade provides more detail on how the moving average setup works.

Bear market. The majority of cloudbanks have price that bottoms in or near (within less than a month of) a bear market. After the bear market ends, everyone jumps in to buy cheap stocks and the bull market begins with gusto, carrying stocks upward.

Measure the drop. As the stock drops out of the cloudbank, measure how far it has dropped. I used 40% as the minimum drop for a cloudbank trade. If you buy into a cloudbank with a drop less than 40%, you risk seeing price continue lower or a small potential profit.

As mentioned in Table 18.2, the usual drop below the bottom of the cloudbank averages 66% (median 64%); however, those cloudbank trades that struggle to return to the cloud have drops averaging 82% (86% median). Thus, if your stock is down substantially (more than 66%), it may take an unusually long time to recover to the cloudbank, if it ever does.

Table 18.4 Trading Tactics

Trading Tactic	Explanation
Bear market	69% of cloudbanks see the ultimate low in bear markets.
Measure the drop	Large drops (80% or more) may signal an especially weak situation, where price may not recover to the cloudbank for an unusually long time (if ever).
Lowest low	Use a 4-month simple moving average to time the entry. Buy at the open the month following price closing above the moving average. You can also look on the daily scale for an ugly double bottom (two bottoms with the second bottom well above the first).
Crossover	Once price closes above the moving average, check how far it is below the base of the cloudbank. If it's less than 40%, the stock may continue down. Large declines (like 66%) mean more profit potential, and it supports the belief that the bottom is close by.
Hold time	Hold onto the stock until it reaches the cloudbank (unless fundamentals worsen or events suggest a continued drop).
Sell at cloud base	Once price reaches the cloudbank, the easy profit will be over. It may take a long time for price to rise above the cloudbank, so consider looking for another cloudbank setup instead of waiting for price to continue moving higher.

Lowest low. If price drops in a straight-line run down (that is, price drops month after month, with little or no pause or retrace), a 4- or 5-month simple moving average may work well as an entry signal. Wait for price to close above the moving average and buy at the open the next month.

Another method is to use a confirmed ugly double bottom chart pattern as a buy signal. Think of a double bottom except the second bottom is higher than the first (by more than 5%, but be flexible).

When price closes above the top of the pattern, buy. Set a stop below the price of the first bottom (if you can tolerate such a loss).

Crossover. If you're using a moving average to time the entry, wait for price to cross above the simple moving average (SMA). I recommend a 4- or 5-month SMA. Tests of 4-, 5-, 7-, and 10-month SMAs show the 4 and 5 month values have the largest gain and smallest hold-time loss (the maximum amount of money you might lose if you sold at the worst time).

Measure the drop from the base of the cloud to the lowest low. If the stock has dropped less than 40%, wait. The stock may drop more. Otherwise, buy at the open in the next trading session.

Hold time. Cloudbank trades are buy-and-hold investments. If price drops below your purchase price and it's a bear market, don't worry. Most stocks will be hurting, just like the one you bought. Check the news and fundamentals. If they are fine, then hold on. If it is not a bear market, then recheck your work and the reason for buying the stock. If you continue to expect a recovery, then hold onto the position, otherwise sell it.

Sell at cloud base. Statistics show that it takes longer to move through the cloud than it takes to reach the cloud. Thus, if the stock reaches the bottom of the cloud (or even comes “near,” however you define “near”), then *consider* selling. There are times when the stock is chugging along, making new highs each month. In those cases, hold on and ride the stock through the cloud until price starts moving horizontally or falling. Then sell.

Experience

Let me tell you about what I found in my trade review.

Northwest Pipe Co.

Entry into a cloudbank for me is often set by when I have the cash and am looking to invest. I think that's the case with Northwest Pipe Co. (NWPX). I also mention this trade briefly in the chapter on rectangle tops.

In 2011 through most of 2012, the stock bounced off support at 19 to 21, forming a cloudbank. The last touch was in December 2012. After that, the stock climbed to a June 2014 high of over 41. And then it tumbled, dropping to 7.46 in early 2016.

The stock recovered up to 12 and moved sideways, forming a rectangle top. From my notebook: “Chart pattern traded: Rectangle top, cloud bank (bottom at 19–21). Buy reason: rectangle top. I think the downward plunge from 2014 is over and this will bounce up after the rectangle breaks out upward. I'll put a stop order to buy at 12.41, I think. This is thinly traded, and it's a risk, so I'll buy lightly. Company makes engineered steel pipe water systems. I can't see any growth in that industry. I was hoping the Flint, Michigan, debacle with their corroding pipes would spur some interest in this stock, but I don't see that happening. They closed their Denver facility in mid-2015 and laid off 65 people. Yuck. If we get a downward breakout from the rectangle, then avoid this stock.

“22 October 2016. The [conditional order] triggered two days ago for a buy at market open yesterday. It didn't fill anywhere near the opening price [12.46, filled at 12.70]. *Sheesh*. It filled in the first minute, but right at the very top of that price bar. Bad execution. Even so, we had a good run up in the stock going into noon where it went horizontal the rest of the day. News said that on 19 October, the company was awarded a contract to provide Tarrant Regional Water District and Dallas Water Utilities pipe, almost 67,000 feet of 84" concrete pipe. No word on cost.”

I bought slightly less than half a position with a target of 19 to 21 with a stop at 11.54 for a potential loss of 4.5%. Because this was a long-term holding (buy-and-hold), I didn't place the stop with my broker.

About two weeks later, I filled out the second portion of the trade by buying again, this time trading a V-bottom chart pattern. See that chapter for the entry. They share the same exit, which follows.

The stock climbed but missed the 19 target by 8 cents. It plunged back to 14 and change, only to rise back up to peak at 19.55 just over a month later.

I didn't sell through any of those gyrations. The stock dropped to 12.41 and recovered going into 2018. From my notebook: “9 January 2018. S&P says strong sell as of 3 January 2018. Everything is negative: value, quality, growth, financial health, price momentum. Other analysts are red [bearish], too. Dump this? Insiders are holding onto shares, though. Cloudbank is at 20, so [the stock is] right there, at the base.”

On the sell order, I wrote, “Sell reason: This didn't go anywhere this past year but what scares the willy out of me is the negative analyst view. So I'm going to let it all go. Sell reason: Hit cloudbank base.”

On the trade, I made 51%.

- Lesson: I was late buying into the trade, both in time and price. The turn at bottoms is often V-shaped, whereas peaks are more rounded looking. Try to improve the entry.
- Lesson: If the stock nears a target within 3%, then consider selling.

The second lesson I grabbed from another chapter in this book, but it holds true for this trade, too. The stock hit my 19 target in January 2017 and missed it by 8 cents the prior November. I could have met the target and looked elsewhere for another trade (or traded this one again). Instead, I held on and watched the stock drop back to near my buy price before recovering.

Of course, this wasn't a swing trade; it was buy-and-hold. The stock continued higher, in large up-and-down swings, eventually reaching 36.70 in February 2020, but that's still below the top of the cloudbank. If I held onto the stock longer, I could have almost doubled my money in about 2 years, but that's if I sold at the top (which is doubtful).

Dead-Cat Bounce

Three of my cloudbank trades ended with a dead-cat bounce. American Equity Life (AEL) started as a nice cloudbank. I bought near the low and the stock moved up. Then news came: “Down 15% on news the US targeted annuities in Obama retirement rules. The company is the 2nd biggest seller of the products.” I happened to check in during the day, saw the news, and sold, taking a 2% loss. Four months later, it broke out upward from its sideways move and hit my target (cloudbank low) in 6 months.

- Lesson: Try to better understand the implications an event can have on a stock.

Because the stock was down 15% on the news, others voted with their sell orders, just as I did. To me, the news sounded like a company making buggy whips when cars were introduced. Was their way of life ending? I thought so, but time healed the outlook and the stock climbed.

In Gap (GPS), I was looking for a climb from about 30 where I bought to 36 to 40 as a swing trade back up to the bottom of the cloud. Instead, 10 days after I bought, I sold it. “Sell reason: DCB: The news said that SSS [same-store sales] were pitiful, and the stock was down like 9% after market. So I decided to sell it at the open. That saved me some bucks since it closed over a dollar lower.” The stock bottomed 34% below where I sold.

In Newell (NWL), in late December 2017, I bought half a position in the stock on a cloudbank play to 45. From my notebook: “I'm hoping we don't DCB again in 1.5 months. I'm hoping to ride this up to the cloudbank at 45 and above.” The first dead-cat bounce was in early November, and I usually avoid taking a position in a stock that shows one for 6 months. Why? Because the percentages are too high that another DCB will happen.

From my notebook: “Date sold: 25 January 2018. Order details: Sold all at a few minutes before 10 a.m. after logging in to check on my portfolio. Stock was down 6+ points from prior close on earnings warning and said it plans to sell off assets, close factories, closing up to half of them. Ouch.”

- Lesson: Don't take a position in a company with a dead-cat bounce within 6 months.

Sample Trade

I offer two sample trades, the first of which I show in **Figure 18.4**. This is a monthly chart of a cloudbank with a base, A, of about 23. The stock climbed much higher than that within the cloud, but the base of the cloud found support near 23.

I tried to find out the reason for the drop that began in August 2011, but news on the company's website didn't go back that far.

A 4-month simple moving average (SMA) shows price closing above the SMA at B. That's the buy signal. A trade entered at the open the next month (C) would fill near 12.88.

After that, it's a matter of waiting for price to climb back to 23, the base of the cloud. Notice that price dropped as low as 8.81 in 2013 (a 32% drop below the buy price), which is a substantial potential loss. But cloudbanks are buy-and-hold investments, not short-term swing trades. The hold part means holding your nose and not watching the stock drop.

Anyway, the stock recovered and reached the cloud at D. Sell, right? No. What's the hurry? If the stock is moving up, why not let it coast higher? You can watch the chart, and if the stock on the monthly scale makes a higher low, hold. If it makes a lower low, then sell at the open the following month.

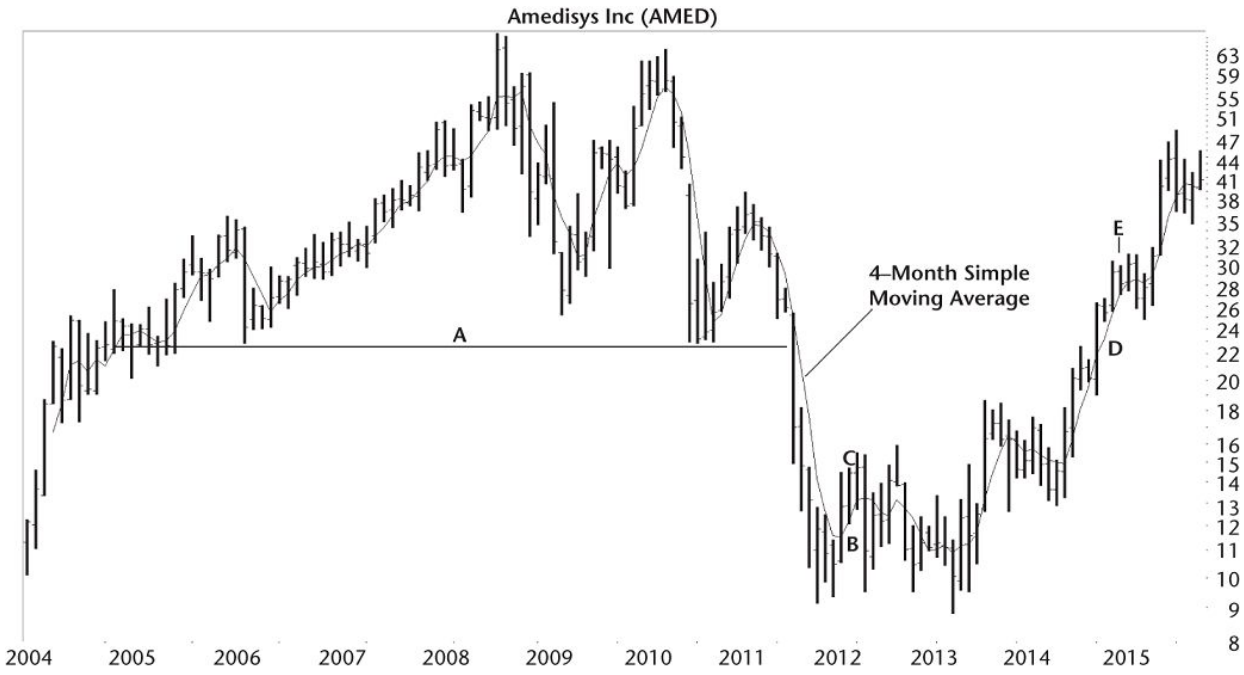


Figure 18.4 A 4-month simple moving average provides a buy signal.

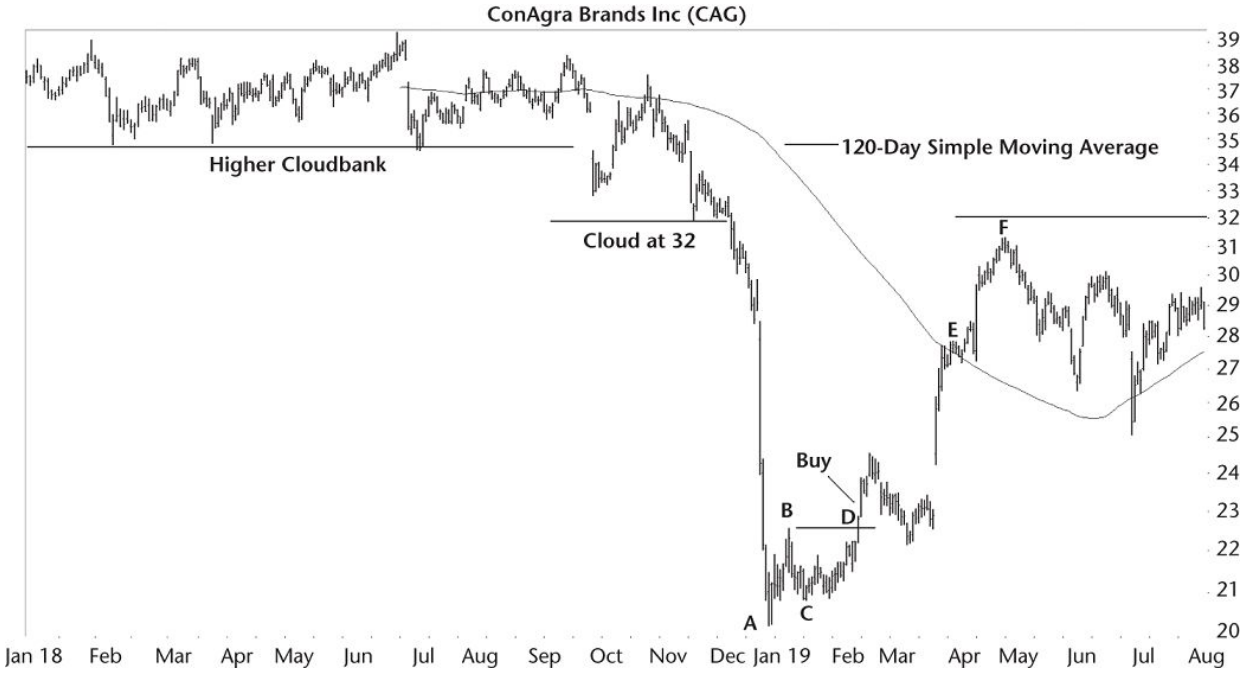


Figure 18.5 An ugly double bottom provides a buy signal.

Let's say you'll hold onto the stock until it stops making higher highs. That happens at E. So you sell at the open the next month and receive

a fill at 28.34 for a gain of 120%. That's a little less than a 3-year hold time, or 41% annually.

Figure 18.5 shows the next trade, but this one uses a chart pattern I call an ugly double bottom. Regular double bottoms are covered elsewhere in this book (see the Adam and Eve combinations of double bottoms). An ugly double bottom occurs when price on the second bottom is more than 5% above the low of the first bottom. Entry is the same as a traditional double bottom (a close above the top of the pattern). The 5% number is arbitrary, so the number is not as important as price making a higher low.

If you look at the monthly chart of this stock (daily is shown), you'll see price bottoming near 32. On this chart, however, price forms a higher cloudbank at about 35. Let's use the lower cloudbank because there's where overhead resistance will likely appear.

Trouble started in December 2018, according to the chart, when price began to spiral downward like a biplane doing aerobatics. According to the company's website, the company entered into a definitive agreement to divest the Wesson® oil brand, announced on 18 December, but it wouldn't occur until sometime in the first quarter of 2019. Two days later, the company announced second quarter results.

The stock bottomed at A, at a low of 20.22 on 26 December. Price recovered to B and formed a higher low at C. Although the bottom at C is not 5% higher than A, it does suggests a recovery (a higher low followed by a higher high is often used as a benchmark of an upward price trend).

At D, price closed above the high at B, and that was the entry signal. Buy the following day at the open for a fill near 22.87.

Notice that the 4-month SMA (E, about 27.70) is well above the buy price. In this example, waiting for price to climb above the SMA means giving away a substantial amount of money.

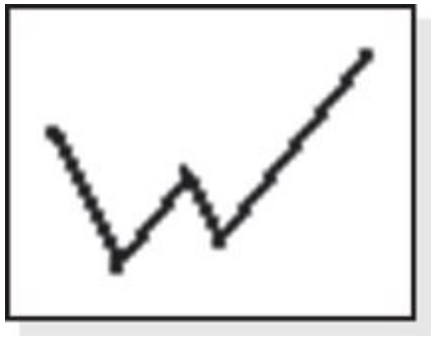
Price on this chart has climbed to F, just short of the 32 target, but more recently is above 37. The stock returned to the cloud.

If you used the ugly double bottom entry method and sold at the 32 cloud base, you would make about 40%. Using the moving average method in this example would give a potential gain of 16%.

The maximum you could have made on this trade (assuming a return to the cloudbank at 32) would be (32 – 20.22)/20.22 or 58%. That gain is best case. The realistic profit is much less, depending on your skill at entering the trade and the stock's cooperation in climbing to the base of the cloud or even higher. Along the way, you may suffer a big potential loss when the stock forms a second bottom (as in Figure 18.4, with a lower low in 2013).

Also notice that each of these cloudbank trades did not happen in a bear market. Bear market trades can be easier. Wait for a large drop (60% to 70%) and buy when the stock appears to find a bottom. With a 60% sale on the stock, you can take comfort in knowing that you are buying closer to the bottom than the top. All you have to do is wait for a bull market to send the stock higher. Yes, it could take years, but that is how you make the big bucks.

19
Crab®, Bearish



RESULTS SNAPSHOT

Appearance: Looks like a big W with the location of turns governed by Fibonacci ratios.

Downward Moves

	Bull Market	**Bear Market**
Performance rank	1 (best) out of 5	2 out of 5
Breakeven failure rate	19.8%	8.9%
Average drop	–14.3%	–22.9%
Volume trend	Random	Upward
Point D reversal rate	87%	91%
See also	Big W, bearish bat, bearish butterfly, bearish crab, bearish Gartley	

The bearish crab chart pattern looks like a big W except Fibonacci numbers qualify valid patterns. I'll explain appearance later in this chapter.

I measure performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout.

Therefore, the layout of this chapter is different from most other chapters in this book.

The Results Snapshot shows the important numbers for this pattern, starting with the performance rank. This pattern places first and second in bull and bear markets, respectively. Take a bow. I measured performance from the high at the end of the pattern to the ultimate low, so I can compare performance from pattern to pattern.

The breakeven failure rate is better than non-Fibonacci-based patterns, too. The *breakeven failure rate* describes a measure that counts how often price fails to drop more than 5% after turn D (D is the last point in the pattern).

The average drop is mixed, though. The bull market average is slightly worse but the bear market is slightly better than non-Fibonacci-based patterns.

The volume trend is random, really, for both bull and bear markets (50% for bulls and 51% for bears).

The next line in the table may be the most important: the reversal rate when price reaches D. Swing traders will want to see price drop at D so they can short the stock or sell a long holding. The above table shows at least 87% of the time price drops after turn D. We'll see later how far price drops. That's important, too. A pattern may have a large reversal rate, but if price doesn't travel down far from there, it's like trying to drive to work on a flat tire (meaning it's dangerous).

Let's surf the trading waters for bearish crabs to see what they look like.

Tour

Figure 19.1 shows a bearish crab at turns XABCD. Before we discuss the pattern, look at the price landscape. At F the stock peaks but moves horizontally for several months, forming a flat top. After that horizontal movement, a chart pattern appears. The pattern is the crab or the double bottom at AC. In many cases that I looked at, the bullish chart pattern (such as the double bottom) fails to work as expected or as well as expected (you'll see price rise a few percent and then turn lower, busting the upward breakout).

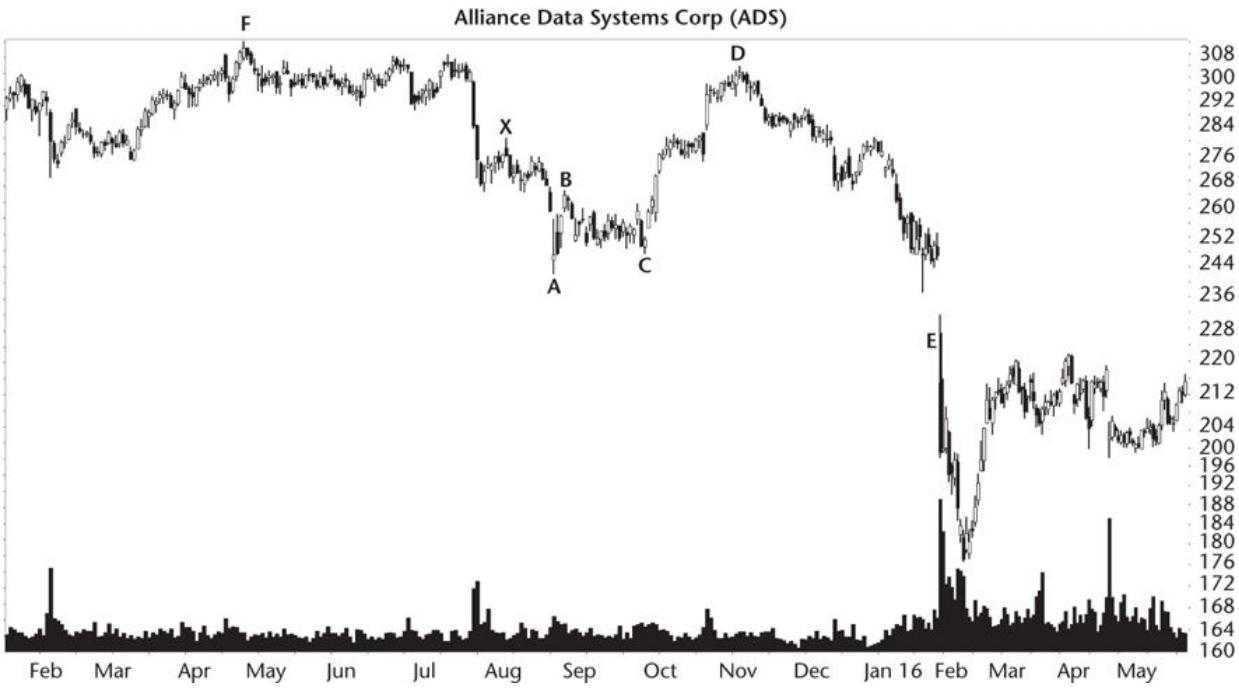


Figure 19.1 This bearish crab sees price tumble after D.

In this case, the bullish double bottom *does* see price rise but only to D. After that, price tumbles. The move amounted to a rise from B (the top of the double bottom) to D of 13%. That's good for a swing trade but far below the average rise for double bottoms.

Be cautious when you see price form a top and a bullish chart pattern appears at the end of that top. It can be a bull trap.

Let's talk about the bearish crab. Price drops into the pattern from F, forming the five turns XABCD. The turns are set by Fibonacci numbers, which I'll discuss in the next section. Don't depend on the pattern looking like this. Because the Fibonacci numbers vary, the

shape of the pattern will look different from example to example. However, if you look at them from across the room (maybe using a large room and squinting), they'll appear like a big W or double bottom with tall sides.

At the end of the pattern, price rises to D. Here's the key to Fibonacci patterns. They are supposed to make a substantial turn at D. In this case, being a *bearish* crab, price is supposed to turn down. That doesn't always happen, but for the crab, the turn rate is very high, at least 87% of the time.

The turn rate is the first half of the puzzle. The second half is how far price drops. It doesn't do traders much good if price whips back upward. For the crab, the average decline is weak (14% in bull markets, but only if you trade it perfectly and often enough). For a swing trader, buying in late and exiting early or late will cut that percentage down, so you may struggle making money with this pattern.

It's also possible you could do better, because the 14% number is an average of over 1,300 patterns. If you have a better pattern recognition algorithm than the one I used or employ additional trading tools to filter out duds, then there's money to be made. Even just knowing that price will turn down at D is valuable.

In the example shown in Figure 19.1, the stock turned down at D and dropped, gapping lower at E (breakaway or continuation gap) and breaking out of the pattern downward there. The drop to the low in February almost cut the price of the stock in half. Bet that hurt.

Identification Guidelines

Table 19.1 shows the identification guidelines. **Figure 19.2** shows what a well-behaved bearish crab should look like and how it should perform.

Appearance. I don't know how the crab name came about for this pattern. What we see in the pattern are a number of tight turns (XABC) with point D way off in the boonies. That's because the Fibonacci extension for the DBC turn is a long one, between 2.618 and 3.618 of the BC length. Let's talk about how I programmed my computer to find the turns.

BA/XA retrace. Retrace BA of the XA move must be one of the Fibonacci numbers listed in Table 19.1. To find the value of B, I first picked two minor high–low turns (X and A) and then searched for turn B. In this example, the high at X was 46.89, the low at A was 41.68, and the high–low range of B was 44.54 to 43.61. I used the high–low range of the last point to see if it spanned a Fibonacci number. If it did, then I found turn B. Here's the equation using the high at B: (44.54 – 41.68)/(46.89 – 41.68) or 0.55. Using the low at B we find: (43.61 – 41.68)/(46.89 – 41.68) or 0.37. The range of .37 to .55 encompassed two Fibonacci numbers, .382 and .5, so we found turn B.

Table 19.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big W with the location of turns governed by Fibonacci ratios.
BA/XA retrace	The ratio of BA/XA is one of .382, .5, or .618.
BC/BA retrace	The ratio of BC/BA is one of .382, .5, .618, .707, .786, or .886.
DC/BC extension	The extension of leg DC to BC is one of the Fibonacci numbers: 2.618, 3.14, or 3.618.
DA/XA extension	The ratio of DA to XA is 1.618.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

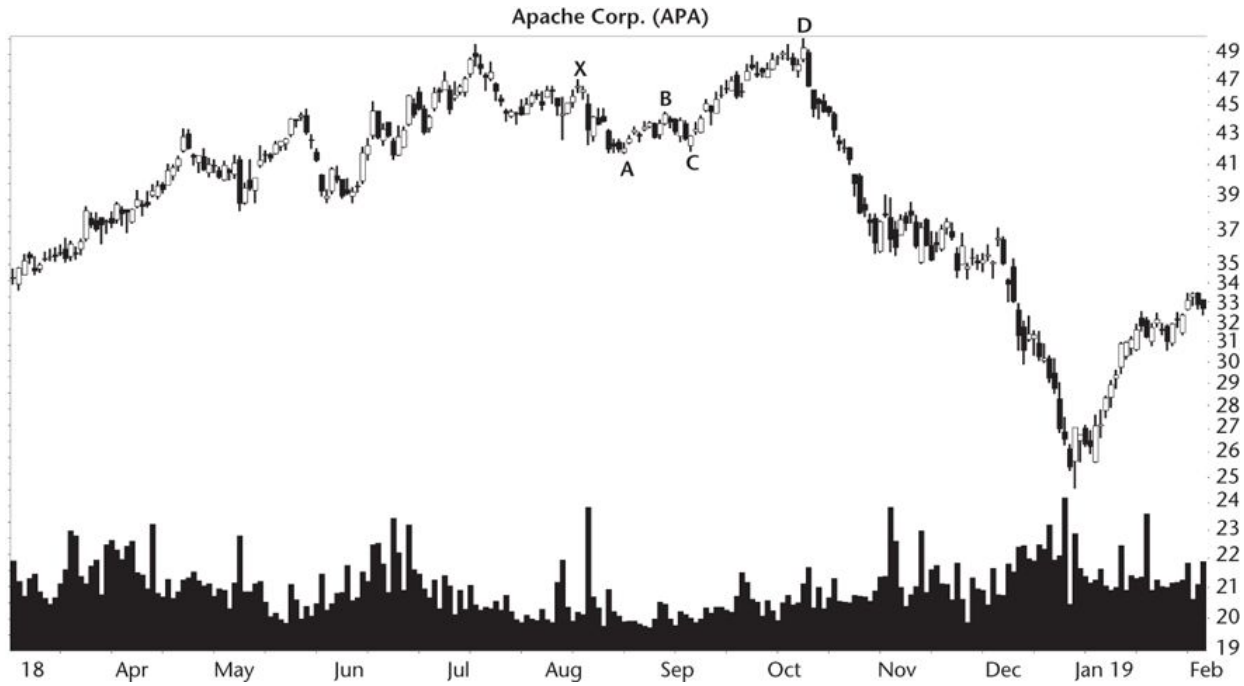


Figure 19.2 This well-behaved crab has a downward breakout.

BC/BA retrace. The retrace of BC to BA used the low at A, the high at B, and the last point used the high–low range of C. C has a high–low value of 42.92 to 41.82. Plugging the values into the ratio formula (B – C)/(B – A), we find the range to be .57 to .95. The range comfortably fits the numbers listed in Table 19.1, so we found a valid turn C.

DC/BC extension. The extension works the same way as a retrace. In this case, the formula is (D – C)/(B – C). Using the high–low value of D (50.03 to 48.19) gets a Fibonacci range of 2.34 to 3.02. Point D spans the 2.618 Fibonacci number, so D qualifies.

I use the high–low range for the last point in each turn because Fibonacci patterns are complicated and that makes them rare. Giving them a bit of leeway at each turn helps boost the sample count without including bogus patterns. At least, that's my impression of the results. Your software may use a different algorithm and find different results.

DA/XA retrace. For the last turn, I use a 3% window. Plugging numbers into the ratio using the high at X, low at A, and high at D gives a value of 1.6. That's within 3% of the target 1.618 Fibonacci number. The pattern qualifies as a valid bearish crab.

Duration. I limited patterns to no more than 6 months long.

The stock dropped from D, just as it was supposed to, cutting price more than half in less than 3 months. Don't expect this kind of decline from bearish crabs, though.

Focus on Failures

Figure 19.3 shows what I consider a failure of the bearish crab to perform as expected. I show the crab marked by turns XABCD. The turns have been checked, and they qualify as a valid Fibonacci pattern. Volume trends lower at F (verified using linear regression) probably due to the tall volume spike at the start of the pattern.

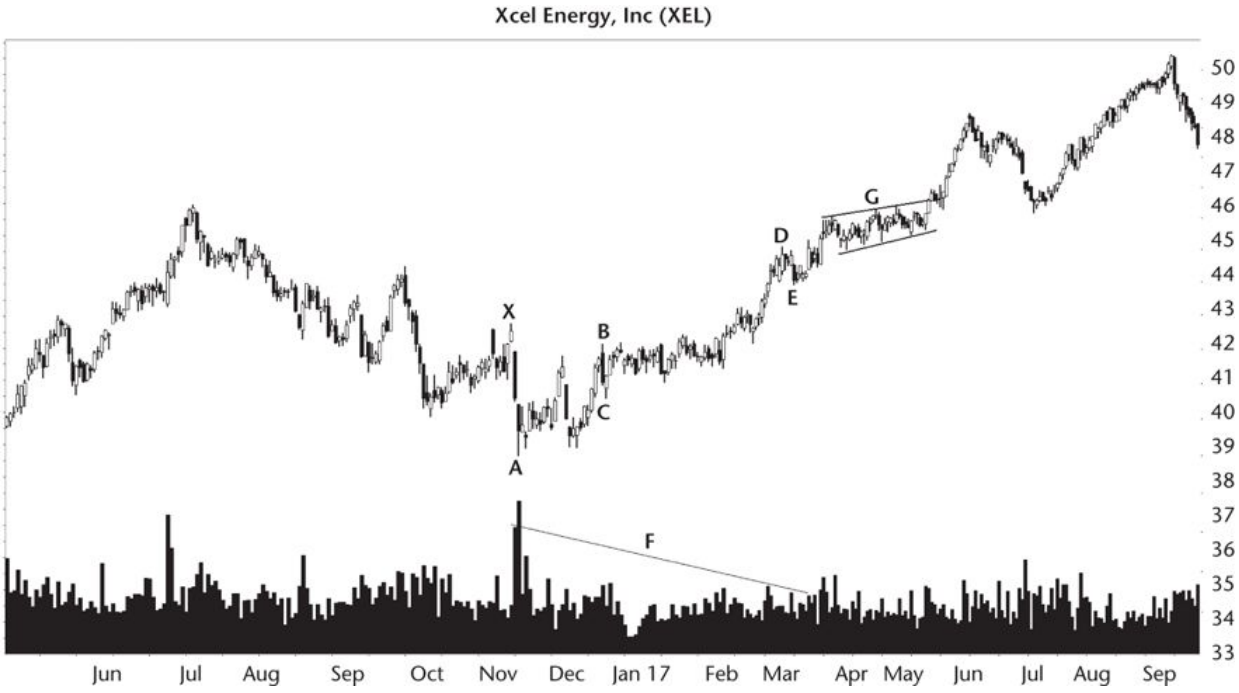


Figure 19.3 This bearish crab fails to see price drop far after turn D.

The move from the July peak in 2016 to D is a nice and gentle rounded turn. The rising channel at G forms a handle for a cup with handle pattern. That's a bullish pattern, and it works in this example. Price rises after the handle, peaking at 52 and change in mid-November (not shown).

Let's focus on the crab. In this example, price turns lower at D, but price doesn't drop far, to E. That drop measures 3%, well short of the 14% average drop for bearish crabs. This crab shows an example of what I call a 5% failure.

I count how many times a chart pattern fails to see price drop more than 5%. The 5% failure rate for crabs is almost 20%. That's high, but anything above zero is high if you're on the losing end of a trade.

Price drops to E in this example, in a 1-day plunge before beginning the retrace. The stock moves higher as I discussed. If you were to short the stock at D, you would have difficulty pulling out a profit from the trade.

If you held a stock long and expected a steep drop at D and sold proactively to maintain your profit, the pat on the back you gave yourself as price dropped to E would be a hammer blow to the shoulder when the stock peaked at 52 in the winter.

So let's discuss the performance numbers to get a better handle on how bearish crabs actually perform.

Statistics

Table 19.2 shows general statistics for the bearish crab.

Number found. I dug up 1,566 crabs in 883 stocks using data from December 1990 to June 2019. Not all stocks covered the entire time, and some stocks no longer trade.

Breakeven failure rate. This is a count of how many patterns fail to see price drop more than 5% below the high at D. The lower the number, the better. As the table shows, and as one would expect, bear markets have less than half the failure rate of bull markets. That's because price is following the downward market trend in bear markets instead of dropping against a rising trend in bull markets.

Table 19.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,357	209
Breakeven failure rate	19.8%	8.9%
Average decline after D	–14.3%	–22.9%
Volume trend	50% Random	51% Upward
Performance Up/Down volume	–15% U, –13% D	–24% U, –22% D

Average decline after D. I measured the average decline from the peak at D to either the ultimate low (the lowest low before price climbed more than 20%) or the lowest low measured from D to where price closed above point D. Patterns in bear markets show larger declines. No surprise there.

Volume trend, performance. The volume *trend* numbers are random. However, the *performance* numbers confirm that crabs with upward volume trends (as measured using linear regression from the start of the pattern to the end, X to D) marginally outperform those with downward volume trends. I consider the performance differences to deserve a yawn.

Trading Tactics

Swing traders will want to pay attention, especially if they aren't shy about shorting a stock. The bearish crab is all about going short at or slightly after turn D. How well does that work? I crunched some numbers, and **Table 19.3** shows them.

How often does price turn at D? If price doesn't turn down often enough, then the pattern is unreliable and difficult to trade profitably. The crab does a good job forming a minor high at D and pushing price lower. The turn rate is 87% in bull markets and even better in bear markets. In other words, you can depend on price turning lower at D.

How many drop to...? Even if you have a high turn rate for price dropping after D, it doesn't do much good if price doesn't drop far enough to make a profit. The 5% failure rate shown in Table 19.2 helps assess that, but so does measuring how often price reaches one of the turning points in the pattern.

For example, in the patterns I looked at in bull markets, the stocks saw price drop to X (the closest point below D) 59% of the time and slightly better in bear markets, 68% of the time. That's not very good. Turns A, B, and C are lower than X, and they show price struggling to reach them.

The percentages shown in the table aren't that good, so do take care if you decide to short a stock showing a bearish crab. If you own a stock long, it might be prudent to ignore the pattern and just hold on, but that decision rests with you and your situation. It might be that the crab is warning of impending doom (like Figure 19.2 shows). Or it might be a Figure 19.3 type of fake-out (where price climbs shortly after D).

Table 19.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	87%	91%
How many drop to point X?	59%	68%
How many drop to point A?	18%	34%
How many drop to point B?	37%	51%
How many drop to point C?	23%	41%

Sample Trade

Figure 19.4 shows a stock Sandy traded. Her computer software found the bearish crab (marked as XABCD) after the peak at D appeared. The volume trend at F tilted upward, but that didn't bother her. She saw the swift rise from C to D and thought it had potential for continuing the uptrend.

Why?

“See that pattern, the two converging lines after D?” She pointed to her computer screen. “That's a pennant. Those can be half-staff patterns, meaning the upward trend might be only half over.”

“But doesn't the bearish crab warn of a downturn at D?” I asked.

“Let's not confuse the issue with facts.”

To calculate the height of the flagpole, she used the high at D (47.20) and the low at H (42.40) as the start of the flagpole.

“Why H,” I asked, “and not C?”

“H is where price starts to go vertical.” The height of the flagpole was 4.80. The bottom of the pennant was at 46.15 for a target of 50.95. “*Hmm*. The target is below round number resistance, 51, but pushing through 50 will pose a challenge. Let's use 50.93 as the target so I get out before other traders who will sell at 51.”

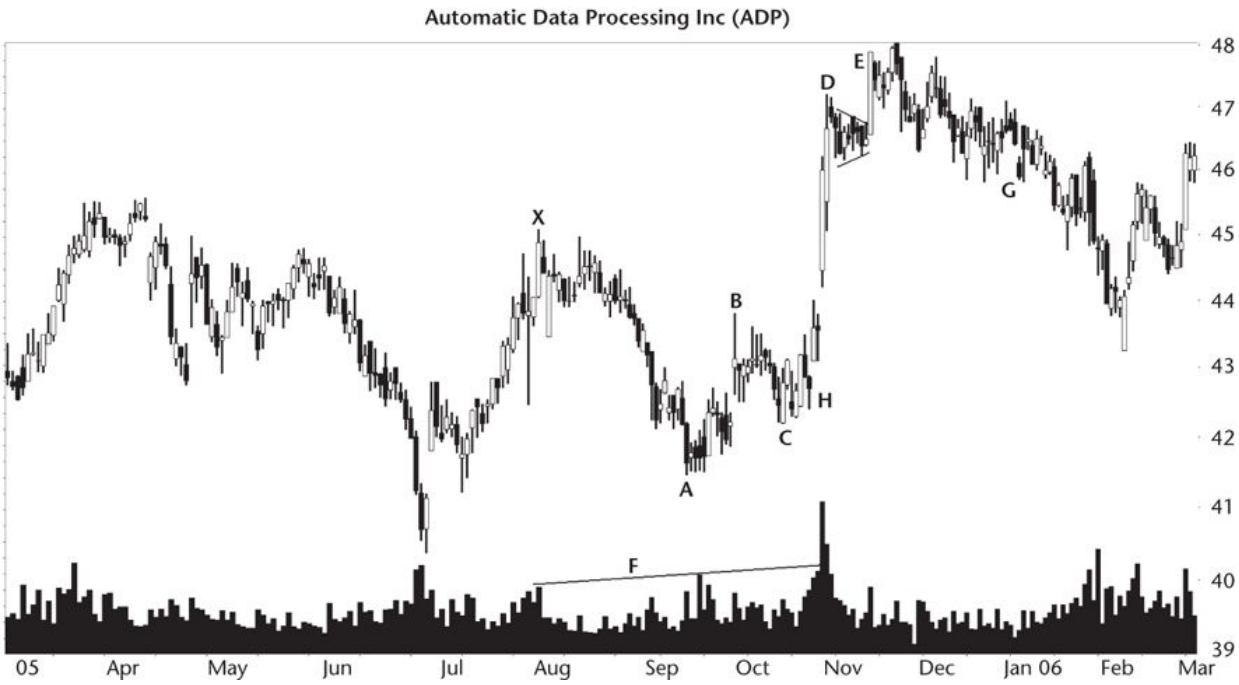


Figure 19.4 Sandy ignored the bearish crab and used a pennant to trade this stock.

She placed a buy stop a penny above the top of D to get into the trade as soon as possible. The buy stop triggered at E, and she received a fill of 47.21.

“What about a stop?”

“Stop? What's that?” She grinned. The bottom of the pennant was at 46.15, so she placed a stop-loss order at 46.07. With a buy price of 47.21 and a stop at 46.07, the potential loss was a reasonable 2.4%. If price reached her target, that meant a gain of about 8%. “That's a win/loss ratio of about three to one, but I don't really pay attention to that.”

Eight days after she bought, the stock looked as if it were heading higher (to the highest peak on the chart). Then things went bad.

The stock eased lower, dropping far enough to hit her stop at G. She lost 2.4% on the trade.

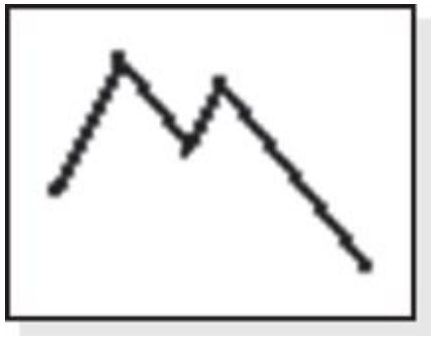
“It was a winning trade,” she said.

My eyebrow shot up. “But you lost money.”

“I won because I traded it correctly. I followed my trading plan.”

If you focus on perfecting your technique and not on money, you'll do better with less stress.

20
Crab®, Bullish



RESULTS SNAPSHOT

Appearance: The pattern is composed of five turns, four of which are based on Fibonacci ratios.

Upward Moves

	Bull Market	**Bear Market**
Performance rank	3 out of 5	2 out of 5
Breakeven failure rate	7.1%	2.6%
Average rise	39.1%	32.7%
Volume trend	Upward	Upward
Point D reversal rate	92%	84%
See also	Big M, double tops (all types), bullish bat, bullish butterfly, bullish Gartley	

The bullish crab is one of the Fibonacci-based patterns. That means the pattern's turns must pass inspection by the Fibonacci police (I'll explain that in Identification Guidelines). I measure performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an upward or downward breakout. Therefore, the

layout of this chapter is different from most other chapters in this book.

The failure rate for bullish crabs ranks first (best, not shown in the above table) compared to other Fibonacci-based patterns, and they are substantially below non-Fibonacci-based patterns (which is good for this pattern, too). However, the average rise is nothing to write home about for both Fibonacci and non-Fibonacci-based patterns in bull markets. In bear markets, the average rise beats most non-Fibonacci patterns and places second out of 5 for Fibonacci patterns.

Let me emphasize that the average rise doesn't really apply to this pattern, so don't worry about underperformance. We're looking to buy the stock not after an upward breakout, but after the pattern bottoms at D, the end of the pattern. I'll discuss this more later.

The reversal rate is the elephant in the room (careful where you step). If price doesn't turn higher at the end of the pattern (turn D), then swing traders will find it difficult to make money. With this pattern, the turn rate is at *least* 84% (bear market, on average), which I consider excellent. But we need to see if a sustained price trend develops after the turn. That's because performance might be like many candlestick patterns I tested. Some have high reversal rates, but price doesn't go anywhere. Those candlesticks aren't tradable patterns (by themselves).

Before we go any further, let's see what a bullish crab looks like. [Quick anecdote: When I was living in Boston, I owned two 11” Oscars (a fish), which I raised from 4”. Anyway, I bought a crab, and one of the Oscars ate the thing. All I saw of the crab was one red claw poking the Oscar in the eye. I turned vegetarian after that.]

Tour

Figure 20.1 shows an example of a bullish crab with an upward reversal at D. Turns XABCD compose the crab pattern. Fibonacci ratios determine three of the turns with the first two points being a random selection until you can find a qualified point B. I'll talk more about how I find these patterns in the next section. Let me add that you need a computer with pattern recognition software to find crabs. If you want the one I used, it's available for free at my website: www.ThePatternSite.com.

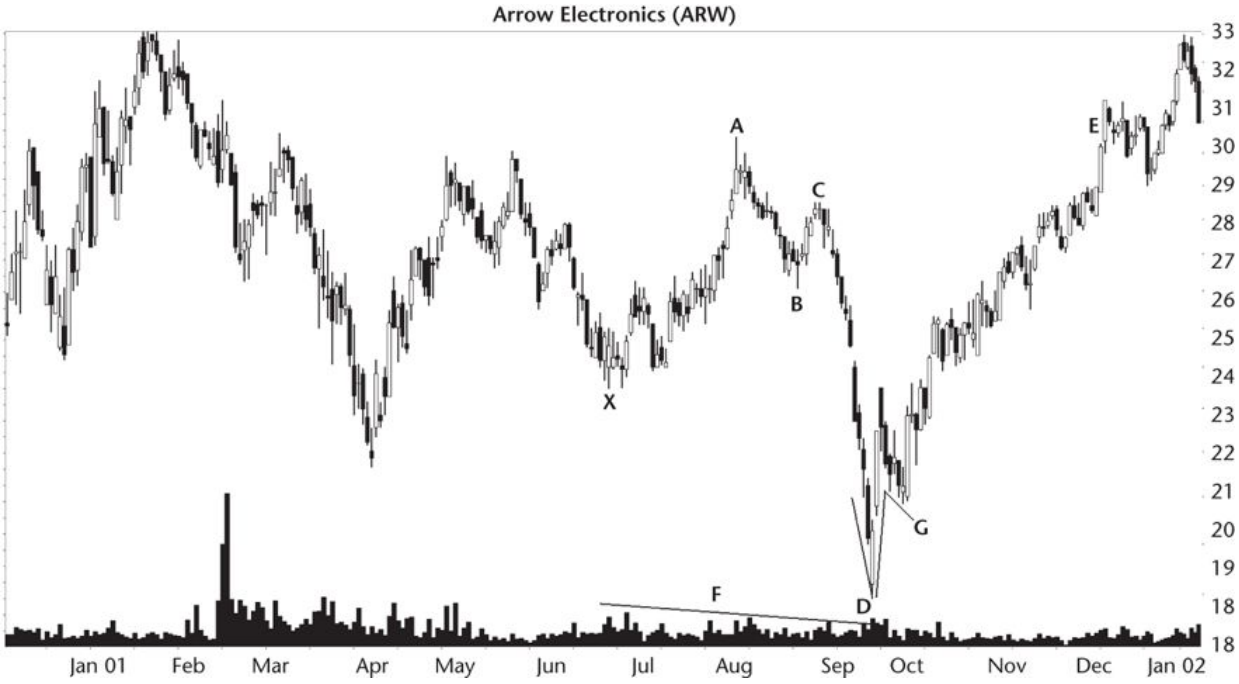


Figure 20.1 This bullish crab forms an extended V-bottom at turn D.

Volume (F) slopes downward in this example, and that's unusual because it happens once every three crabs. Even so, we'll see that an upward volume trend in bull markets can improve performance by a few percentage points.

At D, price reaches the end of the crab, forming a V-bottom pattern with an extension (G) in this example (that is, an extended V-bottom chart pattern). The stock makes a dramatic and wallet/purse-filling rise to E where an upward breakout occurs (a close above the high price of turn A constitutes an upward breakout). Unfortunately, the

stock runs out of steam and price collapses, but only for a few weeks before the stair-step rise resumes.

Identification Guidelines

Table 20.1 shows identification guidelines for crabs. Refer to Figure 20.2 for a visual. I show the bullish crab as turns XABCD. Volume slopes upward (E) as measured using linear regression from point X to D (the start and end of the crab). This crab breaks out upward at F when price closes above the top of the pattern. However, the rise from D is what's important for swing traders (who buy near the D low and surf price higher).

Appearance. The crab pattern is a five-turn beast. What I find odd about this pattern is both the name (crab) and how far turn D is from the body of the pattern. As they say, it is what it is. Let's discuss how I find the five turns.

Table 20.1 Identification Guidelines

Characteristic	Discussion
Appearance	The pattern is composed of five turns, many of which are based on Fibonacci ratios.
AB/AX retrace	The Fibonacci ratio should be one of .382, .5, or .618.
CB/AB retrace	The ratio should be one of the Fibonacci numbers: .382, .5, .618, .707, .786, or .886.
CD/CB extension	The extension of leg CD to CB is one of the Fibonacci numbers: 2.618, 3.14, or 3.618.
AD/AX retrace	The ratio of AD to AX is 1.618.
Volume	Volume is upward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

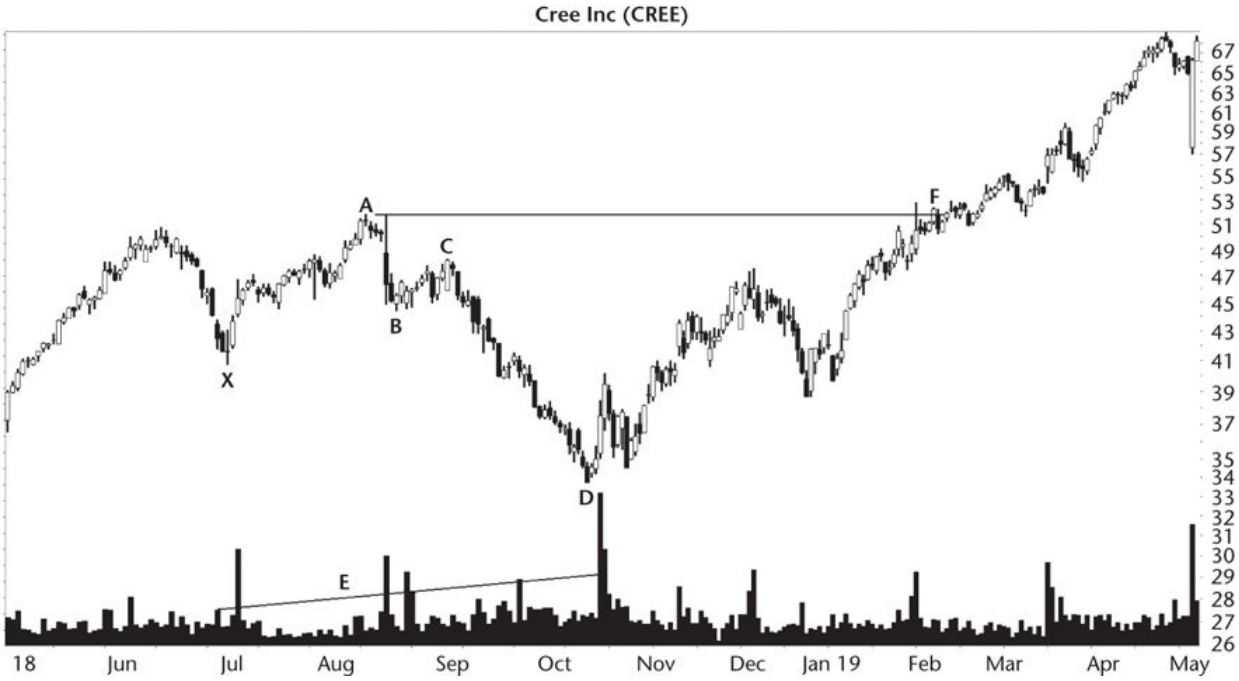


Figure 20.2 This bullish crab shows a sustained uptrend after an upward breakout.

AB/AX retrace. I programmed my computer to find minor highs and lows and selected two points, X and A. Then I searched for turn B. If the ratio of AB to AX spans one of the three Fibonacci numbers listed in the table, then point B is a valid crab turn.

To do this, I used the low at X (40.75), high at A (51.78), and for the target turn (the last point of the three), the high–low range of B (45.64 to 44.34). Plugging the numbers into the ratio we get (using the high at B): (51.78 – 45.64)/(51.78 – 40.75) or .56. Using the low at B, we get (51.78 – 44.34)/(51.78 – 40.75) or .67. The range .56 to .67 spans the .618 number, so we found turn B.

CB/AB retrace. In a similar manner, I use the high–low range of C (41.82 to 48.23) along with the high at A and low at B. If you plug the numbers into the CB/AB ratio, you get a range of .20 to .52. That range spans .382 and .5 from Table 20.1, so we found point C.

CD/CB extension. For the extension, I use the same high–low method with the last point (D, 34.85 to 33.72). I also use the low at B, and high at C. That gives a range of 3.44 to 3.74. The 3.618 number fits snugly in that range, so point D is valid, too.

AD/AX retrace. For the last ratio, I use a 3% window to check if the AD to AX ratio is 1.618. Plugging in the high at A, low at X, and low at D, we get (51.78 – 33.72)/(51.78 – 40.75) or 1.64, which is within 3% of 1.618. In other words, the pattern qualifies as a valid bullish crab. Your pattern recognition software may use a different algorithm and find different results.

Volume. Volume shown during formation of the crab is usually upward, and that's good news in bull markets (performance improves).

Duration. I limited pattern length to 6 months or less. That's an arbitrary limit I place on some patterns when searching for them.

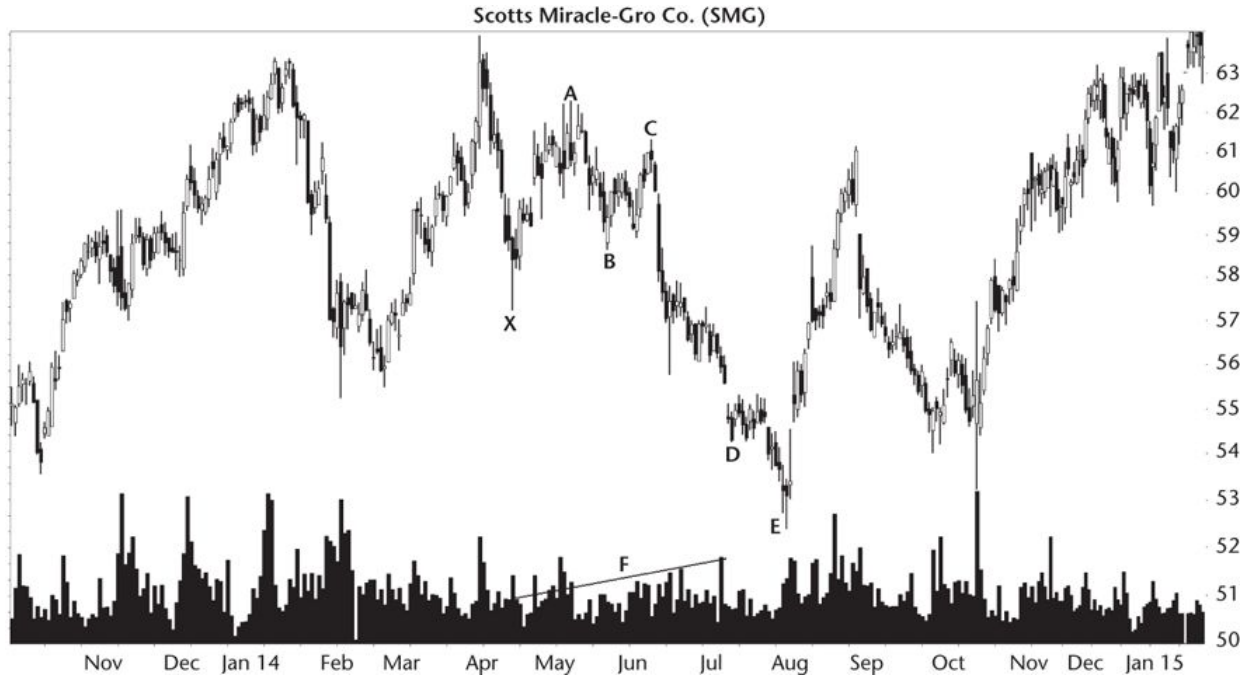


Figure 20.3 This bullish crab breaks out downward after climbing just 2% above the low at D.

Focus on Failures

Figure 20.3 shows what I consider to be a failure of a bullish crab to perform as expected. Volume (F) slopes upward as it does over 60% of the time.

In this example, the stock reaches point D and price forms a bottom, just as it is supposed to do. However, the stock forgets to rise much (just 2%). The stock breaks out downward when it closes below turn D and makes its way down to E.

Price doesn't stay down long at E, just one trading day. Price does a quick reverse and climbs up, forming a near-vertical wall to the late August peak.

The failure of the stock to climb at more than 5% after D I classify as a failure. Fortunately, these types of situations are rare, happening about 7% or less of the time. The failure rate is low, even for non-Fibonacci-based chart patterns, and it's even lower in bear markets, 2.6%.

A stop-loss order placed below the low at D will protect you from this kind of failure. Just be sure turn D is in place.

Let's discuss performance using numbers.

Statistics

Table 20.2 shows general statistics for crabs.

Number found. Bullish crabs are rare. I found them in 530 stocks, identifying just 737 patterns that I catalogued. I found the first crab in July 1991 and the most recent one in June 2019. Not all stocks covered the entire period, and some no longer trade.

Table 20.2 General Statistics

Description	Bull Market	Bear Market
Number found	553	184
Breakeven failure rate	7.1%	2.6%
Average rise after D	39.1%	32.7%
Volume trend	61% Upward	65% Upward
Performance Up/Down volume	41%U, 36%D	33%U, 33%D

Breakeven failure rate. As I mentioned, the failure rate for bullish crabs is low, lower than traditional chart patterns and even lower than the average Fibonacci-based pattern. Performance measures the rise from the low at D to the ultimate high. The ultimate high is the highest peak before price drops more than 20% or the highest high before price closes below D (the bottom of the pattern). I counted how often price failed to rise more than 5%.

Average rise after D. The average rise from the low at point D to the ultimate high in bull markets needs work. It's below average. The bear market number, however, is above average for both Fibonacci-based and non-Fib patterns.

Volume trend, performance. I used linear regression on volume from point X to D to determine the trend. Keeping in mind that in bull markets, the average rise is 39%, crabs with volume trending upward see price rise an average of 41%. Downward volume trends are hurt more, when price rises just 36%.

Bear markets don't seem to care about the volume trend. Perhaps with additional samples, they'll take an interest.

Trading Tactics

As I mentioned, swing traders will want to participate in knowing when turn D is in place, and the math for the pattern can give you a clue (you can predict the price of turn D). Then, wait for the stock to bottom at D. Once the turn is in place, buy the stock and ride it higher. Here are some numbers for you to gauge performance.

Table 20.3 shows how price behaves at and after the end of the pattern. Fibonacci patterns have two important features: Price reverses at D and forms a trend. How well do those features work for bullish crabs?

How often does price turn at D? Price turns upward most often in bull markets, as one would expect. The bear market is a slacker, when price bottoms at D 84% of the time. That's still a good turn rate.

How many rise to...? After price bottoms in well-behaved crabs, price rises, but how far? Here's where the results are weak in my view. The closest turn to bottom D is X. If you look back at the charts in this chapter, point X is not exactly close to D. So there's a substantial rise just to reach X. Remember that if price closes below D, then I take the highest peak between that point and D as the ultimate high.

Table 20.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	92%	84%
How many rise to point X?	65%	55%
How many rise to point A?	33%	14%
How many rise to point B?	48%	30%
How many rise to point C?	36%	17%

Price reaches the low at X between 55% of the time (bear market) and 65% of the time (bull market). The table shows the hit rate for the other turns: A, B, and C.

For example, if you hope price will climb to the high at A, which is the top of the pattern, price will reach or exceed that target just 33% of the time in bull markets and less than half that in bear markets (14%).

As a swing trader, keep these percentages in mind and trade accordingly. If price is on a tear, let it continue rising … until it stops. Then get out.

Sample Trade

Figure 20.4 shows a sample trade that Sam made. His trading software identified the XABCD bullish crab automatically for him, soon after turn D appeared. Volume has an upward slope (E) according to linear regression, but it's hard to see that trend by looking at the chart. Regardless, volume considerations didn't make a meaningful contribution to the trade.

Figure 20.4 Sam spotted this bullish crab but shorted the stock.

Sam knows from experience that when a reversal pattern appears soon after a horizontal peak, it's a disaster waiting to happen. In this case, the horizontal peak was the AC move extended to the right, to the start of the trendline). This elongated top meant the bulls and bears were struggling for control but couldn't resolve their conflict. The slight downward tilt pushed the odds of winning to the bears.

The bears eventually won and shoved the stock downward through support. Even though the bulls tried to rally a few times on the way to point D, they didn't have lasting success (certainly not a trend change).

If you were to see the longer-term chart, you'd find that the A-C high is really part of a longer-term downtrend that started back in January

2018, suggesting more pressure to send the stock lower.

To Sam, though, the stock just *looked* as if it would continue lower. A check of other stocks in the same industry showed a mix. One was moving up at a good clip over the past year. One was moving up, but at a slower pace. One was flat and four, yes, four were dropping. It was a mix, but leaning toward being bearish.

He did his financial diligence on the company and what he found supported his bearish stance. Sam placed an order to short the stock a penny below the low at D and received a fill at 17.62.

Why short then? His answer: “You don't short a stock making new highs. You short ones making new lows.”

“But what about the bullish crab?” I asked.

“It died when the pattern broke out downward.”

After the order filled, he placed an order to cover his short should the stock rise to 18.56, which was just above the high directly above F.

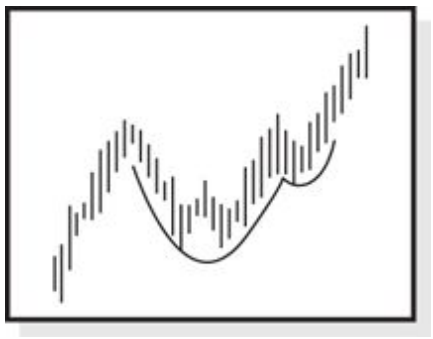
The stock cooperated and didn't just drop, it plunged. At G the stock reached bottom, but Sam didn't know it at the time (meaning price might have continued down). High volume a few days earlier suggested a bottom, but that's an unreliable indicator. The stock at G made a tall candle (with a close near the day's high), which also suggested the stock had put in a bottom.

The stock was making lower lows nearly every day on the way to G, and then it stopped. Price recovered. Why didn't he cover the short then (near G)?

“Greed,” he said. “Pure and simple. It looked like the stock had put in a bottom, but I've been fooled before. So I held on.” He shrugged.

Price rebounded and made a V-shaped turn. When the stock closed above overhead trendline resistance (the day before H), he covered his short the next day, H, and received a fill of 16.68 for a profit of almost a dollar a share. Had he sold at the low at G, he would have made almost $4 a share. But that would have been a perfect trade, and those are as rare as fish eating crabs.

21
Cup with Handle



RESULTS SNAPSHOT

Appearance: Looks like a cup profile with the handle on the right.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish continuation
Performance rank	3 out of 39
Breakeven failure rate	5%
Average rise	54%
Volume trend	Downward
Throwbacks	62%
Percentage meeting price target	61%
See also	Bump-and-run reversal bottom, rounded bottom

The cup-with-handle pattern looks like, well, a cup with a handle on the right. Finding one is more complicated than that, but I simplified the identification guidelines to find patterns that are more prolific than the O'Neil version and work nearly as well. Several of his guidelines are oriented toward trading and not identification, so I exclude them. I'll discuss identification guidelines later in this chapter.

With additional samples, the cup-with-handle pattern has shown good performance improvement, moving from a mid-list performer to posting a rank of three in this edition. That's terrific. This pattern sports a low failure rate, too, ranking second where one is best.

I require at least 150 bear market samples to include in the statistics, but I couldn't find enough cups to qualify. So this chapter only describes bull market results.

Tour

The cup-with-handle pattern was popularized by William J. O'Neil in his book, *How to Make Money in Stocks* (McGraw-Hill, 1988). **Figure 21.1** shows an example. The stock climbed 295% in about 2 months (computed from the right cup rim to the ultimate high).

The stock began rising in early August at a price of about 5.50 and climbed steadily until it bumped up in early December. Volume, incidentally, was very high for the stock at this stage. The stock climbed robustly, then rounded over and plunged back through an earlier trendline, completing a bump-and-run reversal (BARR) top.

During the stock's climb, it reached a high price of 26.88 during late December and a low of 12.38 after the BARR top—a loss of 54%. The rise and decline formed the left side of the cup. Over the next 2 months, price meandered upward and pierced the old high during late March. The rise in price to the old high completed the right side of the cup.

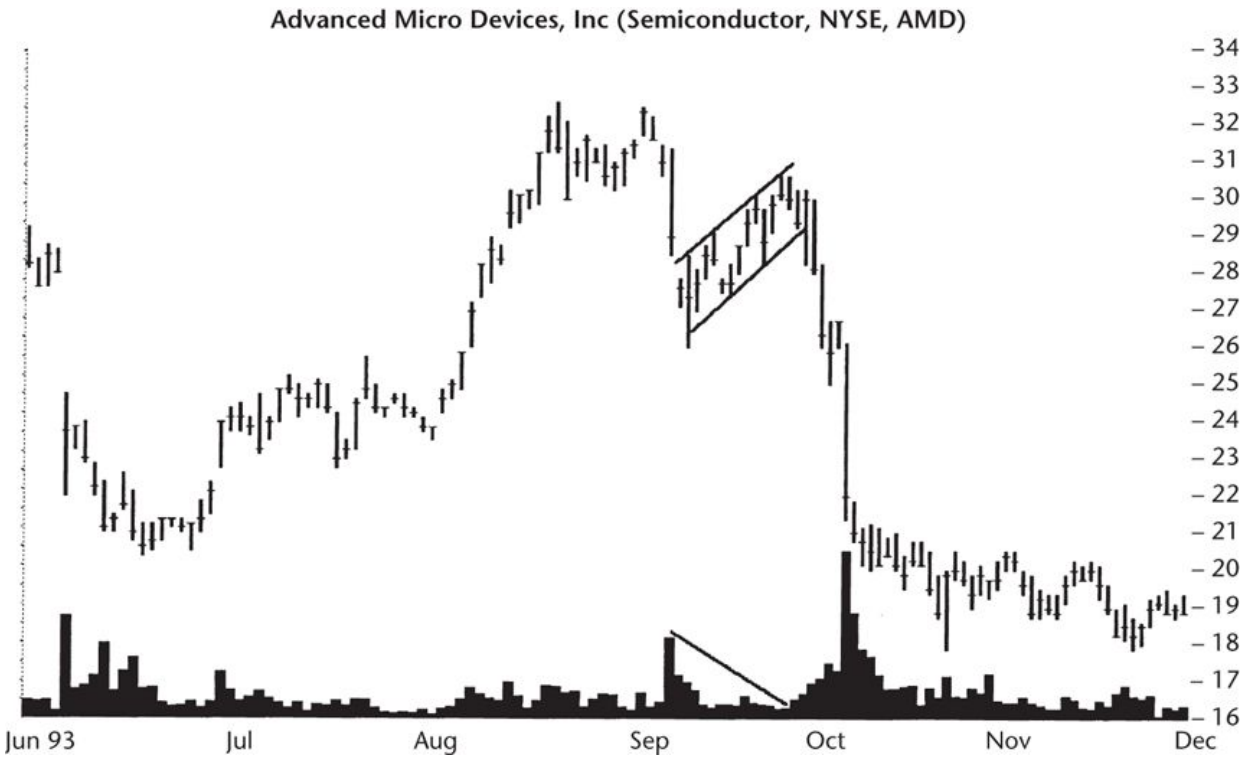


Figure 21.1 A bump-and-run reversal leads to a cup-with-handle formation. Note the price scale as the breakout occurs at about 30 and the stock climbs to 120 in fewer than 2 months. The cup handle is also a high and tight flag pattern.

Profit-taking stunted the climb and price moved horizontally for almost 2 weeks before resuming its rise. This movement formed the cup handle (incidentally, the handle in this pattern is a high, tight flag chart pattern). Volume during formation of the handle was down sloping—higher at the start and trending lower. When price closed above the right cup rim, a breakout occurred. This accompanied a surge in volume that propelled price higher. However, a week after the breakout, price threw back to the handle top before continuing upward. This throwback allowed nimble traders the opportunity to enter new positions or add to existing ones. By late May, just 44 days after the breakout, the stock reached the ultimate high of 120.

Identification Guidelines

Table 21.1 shows the identification guidelines I used to find the cup with handle pattern.

Appearance. Looks like a cup profile with the handle on the right.

U-shaped cup. Judging whether the cup is V- or U-shaped depends on the experience of the person looking at the chart, and to some extent, on the software used to display it (the aspect ratio). So it's an objective interpretation. Mostly, I found patterns with rounded turns and removed V-shaped ones (Figure 21.5 shows a cup with a rounded turn more V-shaped than I like to see). Use the other figures in this chapter as guides.

Up trend. I don't recall excluding any cups with price trending down (such as an inner cup), but you'll want to see price rising into the start of the pattern. O'Neil looks for a 30% rise to the start of the pattern, but that's a trading style and not an identification guideline. If price entered the left cup rim from the bottom, then I was happy with that (without the need for a 30% rise).

Handles. A cup-with-handle without a handle is like peanut butter without jelly. I required my cup-with-handle patterns to have a handle. After cataloging nearly 1,000 of them, I let the statistics determine the size of things, such as the handle length.

Table 21.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a cup profile with the handle on the right.
U-shaped cup	Find U-shaped rounded bottoms and avoid those with a V-shape.
Up trend	Price rises into the start of the cup.
Handles	Cups must have handles. 1 week minimum, forming in upper half of pattern.
Cup rim	Cup rims should form near the same price level, but be flexible.
Breakout direction	Upward.
Duration	7 to 65 weeks.

The minimum handle length is 1 week with a median length of 22 days. I measured the length of the handle as the span from the end of the cup to the breakout. The median ignored outlier patterns where price took months to break out. Handles shorter than the median associated with better performing cups.

I also eyeballed the handle to make sure it formed in the upper half of the cup.

Cup rim. I look for the two cup rims to peak near the same price. Sometimes the handle was above the left cup's rim, and sometimes it remained below. I didn't want the pattern to look like an ascending or descending scallop, where the right side of the cup only reaches halfway up the left side.

Breakout direction. The breakout direction is upward, when price closes above the right rim or handle high (whichever is higher). Downward breakouts, where price closes below the bottom of the cup, invalidate the pattern.

Duration. I kept the cup duration to about 15 months or less.

Figure 21.2 shows another good example of the cup-with-handle pattern on the daily scale. The cup gently rounds up and price climbs

just beyond the left rim before pausing. Price drifts down in the handle, along with a down-trending volume pattern before the breakout. Then volume surges and price moves upward. Two days after the breakout, price moves marginally lower again and enters the region of the right cup rim. After a brief throwback, price is soon on its way again. Less than 2 months later, the stock tops out at 15.50 for a rise of 22%.

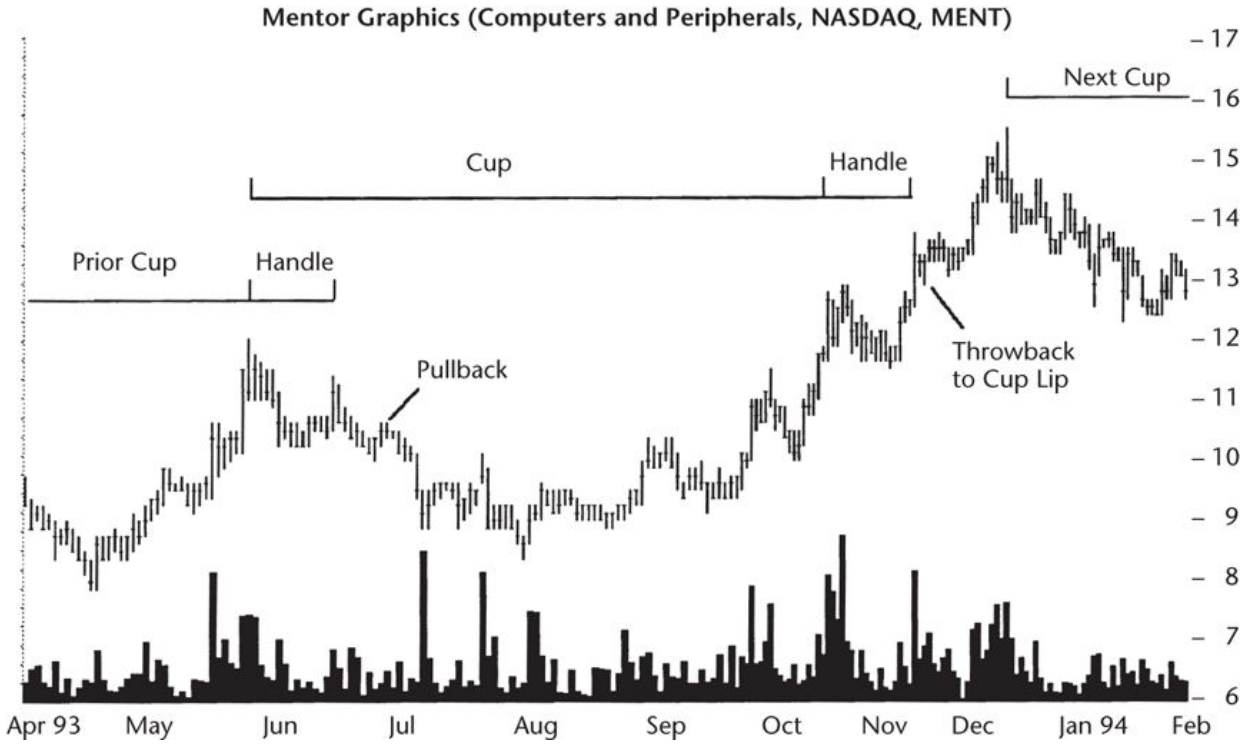


Figure 21.2 A cup-with-handle pattern flanked by other cup-with-handle patterns. This cup and handle is nicely shaped, with the right cup rim slightly higher than the left.

Figure 21.3 shows a cup-with-handle pattern on the weekly scale. When I was searching for cups, I found that weekly scales provide an easy way to identify many of the patterns. Of course, I also looked at daily price data to refine the weekly patterns and identify new patterns that I may have missed.

The chart shows an example of a cup-with-handle in which the rise falters after rising just 11%. Fortunately, after declining back to the handle base, the stock recovers and goes on to form new highs. Ultimately, the stock gains 52%.

The figure also highlights an inner cup. The left rim sees price trending downward into it instead of upward. The handle lasts just 2 weeks, too. However, inner cups offer wonderful trading opportunities because they allow traders to get in on the ground floor of an impending rise. Even if price only rises to the height of the outer left cup rim, the move can be significant.

Focus on Failures

Like most chart patterns, cups fail because of the inability of the stock to rise by more than 5% before declining. **Figure 21.4** shows an example. The nicely shaped cup forms after an extended price rise from 33 to 45. The two cup rims are at about the same price level. The handle seems to form a small cup of its own (but no handle). Price moves up sharply in late September and breaks above the right cup rim before continuing higher, but only briefly. The stock tops at 47.88, moves horizontally for about 3 weeks, and then starts down. Two months later, the stock hits a low of 37.63. The rise after the breakout is slightly less than 5%. I classify as a failure a stock that does not continue moving higher by more than 5% in the direction of the breakout.

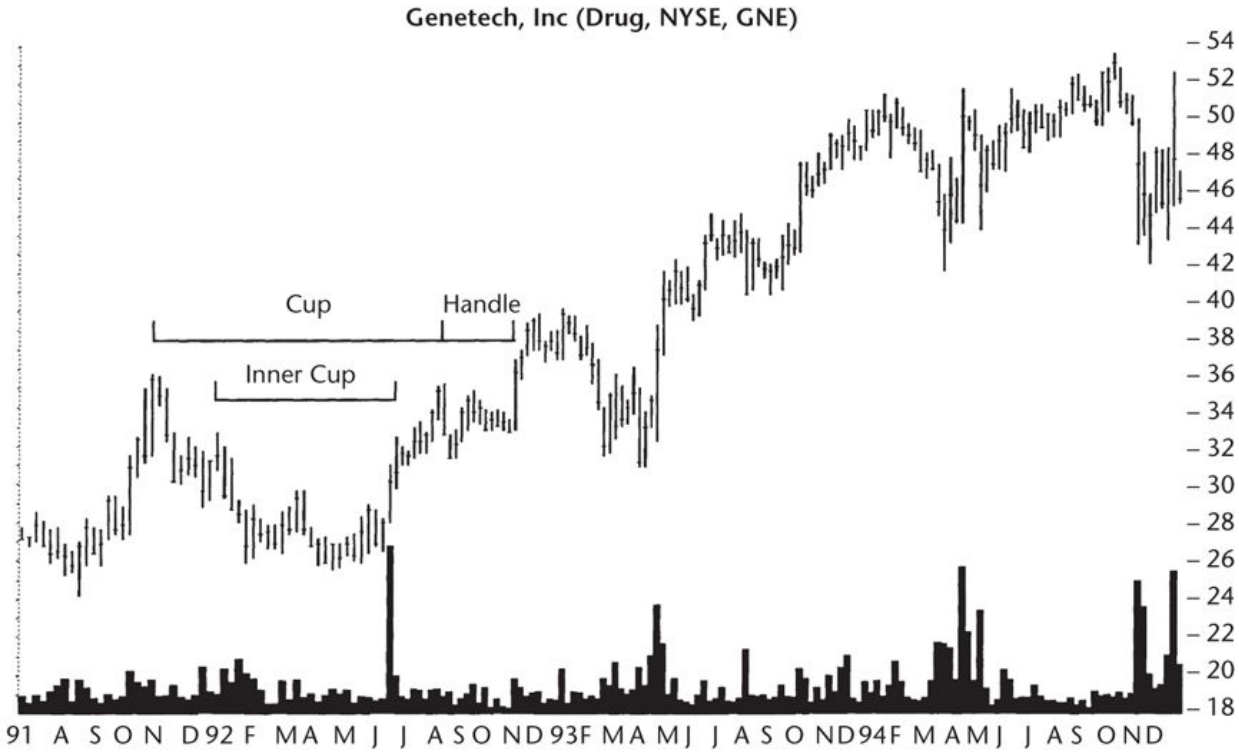


Figure 21.3 A cup-with-handle pattern on a weekly scale. The failure at 10% to 15% above the breakout is quite typical for this chart pattern. However, this stock recovered and continued upward.

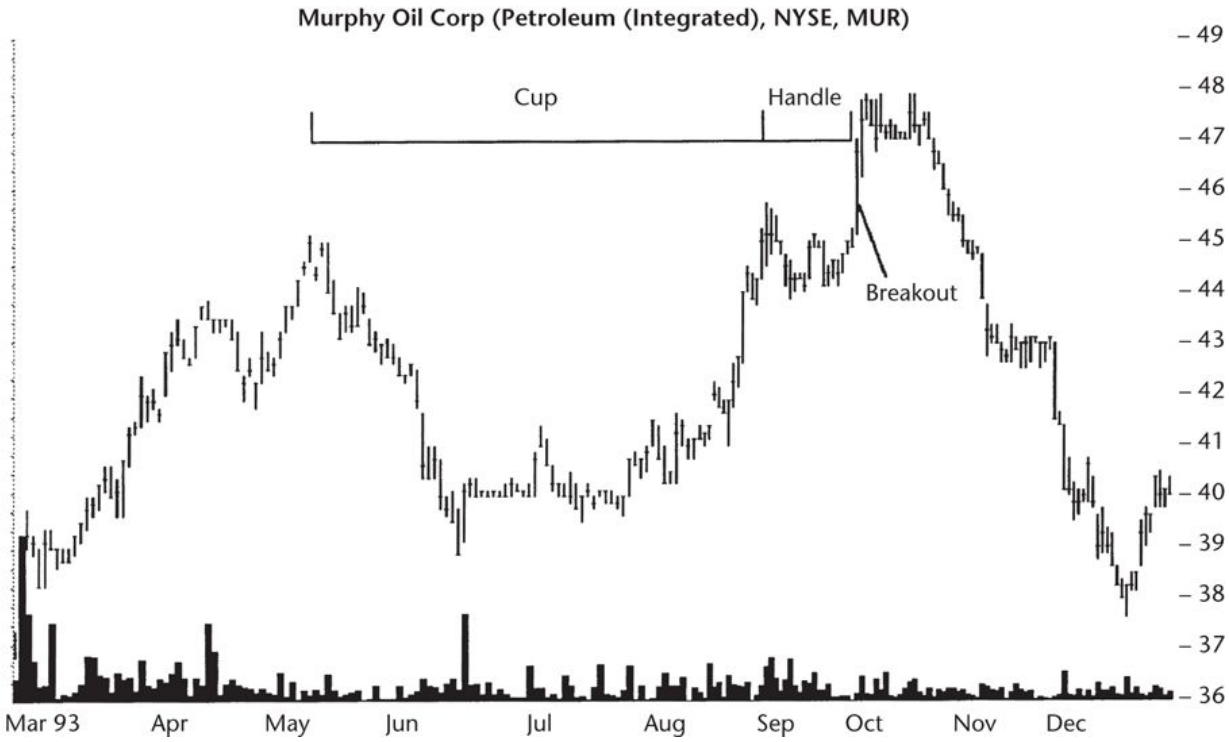


Figure 21.4 Shown is a 5% failure of a cup-with-handle pattern. Although price breaks out upward, it moves less than 5% above the cup rim before plunging downward.

Why do cups fail? Remember than the failure rate for cups is low, just 5%, ranking second out of 39 patterns, where one is best (fewest failures). That's a low failure rate (or the other patterns have atrocious failure rates, depending on whether you're a half-glass-full/-empty person).

The answer to the question is manifold. Overhead resistance can stop price from rising. Because cups tend to be long patterns, fundamentals may change, which sends the stock crashing. The industry might develop supply problems for a main ingredient to a product the company makes (more common is price rises for the feedstock). The general market may turn down or become a bear market. Anything can happen. Often it's as simple as the company failing to beat earnings estimates.

Later in the chapter, we'll see failure rates and discuss them. Let's talk numbers.

Statistics

Table 21.2 shows general statistics for cup-with-handle patterns. As I mentioned earlier, I removed bear markets statistics because I didn't find enough examples to be comfortable commenting on them. They might be offended.

Table 21.2 General Statistics

Description	Bull Market
Number found	913
Reversal (R), continuation (C) occurrence	100% C
Average rise	54%
Standard & Poor's 500 change	14%
Days to ultimate high	303
How many change trend?	69%

Number found. I found 995 cups in 645 stocks with the first cup in September 1991 and the most recent in January 2018. Only 913 of those were from bull markets, so that's what I reported on.

Reversal (R), continuation (C) occurrence. By definition, with price rising into the pattern and an upward breakout, a continuation of the prevailing price trend results.

Average rise. The average rise is yummy, but the median rise (not shown) is an earthbound 34%.

Standard & Poor's 500 change. I compared the rise in the index with the move from the date of the cup's breakout to ultimate high. The index underperformed the cup-with-handle pattern during the same time period.

Days to ultimate high. Because the rise is robust, it takes a long time for price to reach the ultimate high, about 10 months. The median time is half that, though.

How many change trend? Here's where the pattern really shines. Over two thirds of the patterns will see price rise by more than 20%. Very nice, indeed.

Table 21.3 shows failure rates. Cups show failure rates that climb rapidly as the maximum price rises. For example, 5% or 48 patterns see price fail to rise more than 5% after the breakout. An additional 68 patterns, combined with the prior 48, means 13% will fail to see price rise more than 10% after the breakout. Half the patterns will fail to see price rise more than 35%.

Even though the rise from one row to the next seems big, it's much better than for many other chart patterns.

Table 21.4 shows breakout-related statistics.

Breakout direction. By definition, if you don't have an upward breakout, then you're not looking at a cup with handle. A breakout happens when price closes above the right cup rim or handle high.

Yearly position, performance. When I saw the average rise of 238% for patterns within a third of the yearly low, I thought it was a typo. It's not, but it's based on just five samples. Even the 58% gain uses only 29 samples, so it's tiny, too. Most of the patterns will have breakouts within a third of the yearly high.

Table 21.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market
5 (breakeven)	48 or 5%
10	68 or 13%
15	95 or 23%
20	71 or 31%
25	72 or 39%
30	54 or 45%
35	53 or 50%
50	132 or 65%
75	128 or 79%
Over 75	192 or 100%

Table 21.4 Breakout and Post-Breakout Statistics

Description	Bull Market
Breakout direction	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 238%*, M 58%*, H 52%
Throwback occurrence	62%
Average time to throwback peaks	5% in 6 days
Average time to throwback ends	12 days
Average rise for patterns with throwbacks	50%
Average rise for patterns without throwbacks	59%
Percentage price resumes trend	85%
Performance with breakout day gap	53%
Performance without breakout day gap	54%
Average gap size	$0.56

* Fewer than 30 samples used.

Throwback occurrence. Price throws back to the breakout price (or comes close to it) almost twice in every three trades. It takes price a dozen days to make the round-trip and half that time to see price rise an average of 5% (before starting on the return journey).

Patterns *without* throwbacks, which see upward momentum work for them, perform better than do those with throwbacks. That's typical behavior. After a throwback completes, price resumes, rising nearly all of the time, except for the stock you own. Doesn't it seem to work like that?

Gaps. Cups with breakout day gaps don't see the kind of boost traders expect (only one percentage point between gaps and no gaps).

Table 21.5 shows pattern size statistics.

Height. Here's where things get weird. Most patterns see tall patterns outperform short ones, but not cups. It's the reverse. I measured the height of the pattern from highest peak to lowest valley and divided by the breakout price (the highest peak). If the result was

bigger than the median shown in the table, then the cup-with-handle pattern was tall.

Width. Patterns narrower than the median width shown in the table outperformed by a substantial amount. Usually wider patterns show a small performance edge over narrow ones, but not with cups. Width includes both the rounded cup and the handle.

Height and width combinations. We've seen that short cups outperform and narrow cups outperform, so you'd expect the combination of short and narrow cups, on average, to be the best performers. Nooo! Tall and narrow ones do best. Short and narrow places second. In last place are cups both tall and wide (which is usually the best performer).

Table 21.6 shows volume-related statistics.

Volume trend. Volume trends downward most of the time, but the result is not far from random. Does the trend direction really matter?

Rising/Falling volume. The answer to the above question is no. The performance difference between cups with a rising volume and those with receding volume is two percentage points. That's probably because the pattern is so wide that any volume pattern will appear irregular. Linear regression, which is what I used to determine the trend, set the record straight, so I didn't have to guess.

Table 21.5 Size Statistics

Description	Bull Market
Tall pattern performance	52%
Short pattern performance	55%
Median height as a percentage of breakout price	23.2%
Narrow pattern performance	61%
Wide pattern performance	46%
Median width	174 days
Short and narrow performance	59%
Short and wide performance	48%
Tall and wide performance	45%
Tall and narrow performance	64%

Table 21.6 Volume Statistics

Description	Bull Market
Volume trend	61% down
Rising volume trend performance	55%
Falling volume trend performance	53%
Heavy breakout volume performance	54%
Light breakout volume performance	54%

Breakout volume. Heavy breakout volume? Light breakout volume? The cup-with-handle pattern showed no preference in my tests.

Table 21.7 shows how often price reaches a stop location. I split the pattern in half and hope it didn't hurt. I checked how often price returned to one (or more) of the locations shown in the table as price made its way to the ultimate high. Price returned to the top of the pattern nearly all of the time, so a stop-loss order placed there would trigger frequently.

The middle and bottom of the pattern almost never saw price drop that far. Thus a stop placed at either of those locations would work

well, except that the potential decline might be too large. So *do* check the drop and see if you can tolerate such a loss without having a coronary.

A handy stop location is below the handle low. I checked it to see how well the location worked. A stop placed a penny below the handle low would trigger 21% of the time. That sounds a bit high to me, but it will keep the loss reasonable (but check that, too).

Table 21.8 shows the performance over three decades. This table interested me because I wanted to see the performance over time (because the cups in this new edition perform much better than the ones I found in the second edition, which I wrote in the early 2000s).

Performance over time. Performance has been improving steadily over the years. So it's not my imagination that cups perform better now than the ones I looked at 15 years ago.

Failures over time. I counted how many patterns failed to see price rise more than 5%. The failure rates are stable over the three decades.

Table 21.9 show busted pattern performance.

Table 21.7 How Often Stops Hit

Description	Bull Market
Pattern top	82%
Middle	9%
Pattern bottom	1%
Handle low	21%

Table 21.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	49%
2000s	55%
2010s	59%
Performance (above), Failures (below)	
1990s	6%
2000s	4%
2010s	5%

Table 21.9 Busted Patterns

Description	Bull Market
Busted patterns count	95 or 10%
Single bust count	61 or 64%
Double bust count	25 or 26%
Triple+ bust count	9 or 9%
Performance for all busted patterns	–15%
Single busted performance	–21%
Non-busted performance	N/A

Busted patterns count. Few patterns bust (10%), which is refreshing. With some other chart patterns, you need supplemental oxygen because the busted count can take your breath away. No so with cups.

Busted occurrence. I sorted cups by how many times they busted: single, double, and more than two (triple+). Most of the busts are single busts. That doesn't surprise me, but with a pattern as tall as a cup with handle (median height 23%), I would expect fewer double and triple+ busts than that shown. Obviously, some cups struggle to find a trend direction.

Busted and non-busted performance. Because there is not a cup with a downward breakout, I don't show non-busted performance in the table. I only compare single busted patterns with all three

varieties, single, double, and triple+. The negative sign means price dropped, and it's a measure of how far below the bottom of the cup price falls, on average.

Trading Tactics

I show two tables of trading tactics. Let's begin with the usual one for chart patterns, shown in **Table 21.10**.

Table 21.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the lowest low reached in the cup from the high at the right cup rim. Add the difference to the high at the right cup rim and the result is the target price. The bottom portion of the table shows how often the measure rule works.
Buy inner cup	If you discover a cup within a cup, buy on the breakout of the inner cup (when price closes above the inner cup rim). Be prepared to sell at the price of the outer left rim.
Stop location	Place a stop-loss order 15 cents below the handle to limit losses. The stop will trigger 18% of the time.

Description	Bull Market
Percentage reaching half height target	84%
Percentage reaching full height target	64%
Percentage reaching 2× height	40%
Percentage reaching 3× height	26%

Measure rule, targets. The measure rule predicts the price to which the stock will rise. The traditional method involves determining the height of the pattern from lowest low in the cup to the high at the right cup rim. Adding the height to the high at the right cup rim gives the target.

How often does this work? The bottom portion of the table shows the answer, depending on the height used in the calculation. A full height, as described above, works 64% of the time. If you take half the height and apply it in the same matter, you'll get a closer target. Using two or three times the height gives a target farther away, one that price may struggle to reach.

Once you know the target, measure the distance from the current price to the target and change it into a percentage. For example, if the target is 54 and the current price is 45, that's a move of 9/45 or 20%. Page back to Table 21.3 for a sanity check. How often will price fail to rise more than 20%? Answer: 31%. So you have a probability of making money 69% of the time, and that's if you trade it perfectly (and it behaves like the cups I looked at. If I didn't look at them, would they behave better or worse? That's like saying Heisenberg may have slept here).

Figure 21.5 (weekly scale) is an example of the measure rule in practice. Compute the cup height by taking the difference between the right cup high (point A at 19) and the cup low (point B at 10). Add the difference (9) to the right cup rim to get the price target (28). Mid-May sees price hit the target but plummet the following week.

A more conservative price target uses half the formation height. This method gives a target of just 23.50, reached during early July. The stock climbs to the nearer target quickly and without the severe declines experienced on the way to the more risky, higher price target.

Buy inner cup. Figure 21.5 also shows an inner cup. If you are going to trade this chart pattern and can identify an inner cup, buy it. An inner cup appears as two widely spaced minor highs that are at about the same price level. You score as the stock advances to the old high (the price of the outer, left cup rim) and further if the outer cup-with-handle pattern succeeds with an upward breakout. Playing the inner cup shown in Figure 21.5 would have boosted profits about $2 a share or 12%.

Stop location. Once you initiate a trade, place a stop-loss order 15 cents below the handle low (note Table 21.7 places the stop a penny below the handle, so the stop trigger slightly more often). The handle is a place of support and sometimes declines will stop at that point. Placing a stop just below the handle low will get you out of those situations when the stock continues tumbling. However, price will trigger the stop an average of 18% of the time, so you'll have to decide if that's the right location or not.

Table 21.11 shows special features based on the cup-with-handle pattern. I played with handles and rims and checked performance.

Handle height. I measured how far down the handle price dropped below the right rim (7% median), and then compared the performance of those patterns with tall or short declines. Cup patterns with short handles outperformed those with tall handles. In other words, if price does *not* retrace far in the handle, performance improves.

Handle length. I measured the duration of the handle from the right rim to the breakout and found the median was 22 calendar days. Handles shorter than the median saw performance better than patterns with wider handles.

Higher rim. I separated cups into those with higher right rims and those with higher left rims. Those with higher right rims performed better after the breakout.

Table 21.11 Special Features

Description	Bull Market
Tall handle	51%
Short handle	56%
Median handle drop below right rim	7%
Narrow handles	56%
Wide handles	51%
Median width	22 days
Higher left rim	51%
Higher right rim	55%

Experience

The following describes some of my experience with the cup-with-handle pattern.

Rowan Companies

In December 2006 and into May 2007, Rowan Companies (RDC) formed a cup with handle that also looked like a double bottom. I had a buy stop placed 2 cents above the top of the handle. The day it broke out was the day I bought.

From my notebook: “Buy reason: cup with handle/rounding turn in hot industry. Every chart pattern is a sell [did I mean *buy*?] signal, and so I'm going to take this one. The upside will be 44, so I stand to make $5 per share on the trade if all works as planned. Downside is stopped out at the volatility stop setting of 35.45. Yuck. At an entry price of 39.11, downside is 12% and that's too far. Let's keep the stop loss at 10% so that would make the stop 35.20. Upside is 13%. Not a large ratio... Yesterday I didn't feel good about this trade so I called it off. Today, I'm looking to buy something in a hot industry. Sounds like this trade is going to be a dud...”

The stock climbed a wall of worry in a series of steps. Perhaps it was me worrying. Six weeks later, I wrote this: “Sell reason: Yesterday I noticed that many stocks in the industry and the other oil industries had topped out and were heading down. I did a survey and found that 11 of 14 in the oil field, 9 of 10 in the integrated petroleum field, and 6 out of 6 in the producing field were trending down. That's 26 out of 30. I can't expect Rowan to buck against such a trend. It's time to take my gain and exit as best I can.”

I made 6% on the trade, about half of what I expected. If I wasn't frightened out of the stock and held on until it peaked, it would have reached my 44 target and kept going up to 46.16. If I sold at the peak, I would have made 18%. But selling at the peak would have represented a perfect trade.

- Lesson: Not all cups with handles see big gains (median rise is 34%).

- Lesson: This trade would have benefited (slightly) by using a trailing stop placed a penny below the prior day's low.

I was proactive in this trade by looking at other stocks in this industry and similar industries but that turned out to be a mistake. It forced me out of the trade almost a month too soon.

- Lesson: Watch other stocks in the same industry for insights of how your trade may unfold.

EMC Corp.

After a nice rise from 9 to 15, EMC Corp. (EMC) formed the left lip of a cup with handle at the start of 2005. The cup completed the right handle in June. The bottom would have looked at like a complex-head-and-shoulders bottom (multiple heads) if price didn't spike downward for 2 days in April.

Here's my notebook: “Buy reason: A perfect cup with handle. I'm buying before confirmation because I feel strongly about this one. On the weekly chart, the Jan 2005 peak pokes through a long-term down trendline. If this stock can finally push through that resistance, the sky's the limit. I might buy more if that happens. Score +3 for 18.19 target. Only 2 problems: a weak market and lack of confirmation yet. Before the open on 7 July 2005, terrorists exploded four bombs in London. I thought that would cause the stock to gap lower on the open and then recover through the day. It turns out I was right as I got a fill (14.22) much lower than yesterday's close (14.48).”

A week later, I was out. “Sell reason: I believe this has formed a lower high. That suggests a short-term trend change. Since I have a profit, I thought I'd cash out now and wait for it to go down, then recover. When it breaks out of the long-term down trendline, then it might be worth another look.”

I made 2% on the trade, but it was a good thing I sold. The stock tumbled and broke out downward from the cup pattern, bottoming at 9.44 or 35% below where I sold. My instincts on this trade were good.

- Lesson: Sometimes when price fails to follow through to a new high, it means a trend change.

CNO Financial

This trade was a mistake. CNO Financial (CNO) started forming a cup with handle in October 2009. In March 2010, the stock completed building the right rim. Then it went to work on the handle. It completed the handle in the middle of April when I bought. “Buy reason: Possible cup with handle, good profit potential for a long-term hold (3×) [triple my investment] and only own 3% of this. I wanted to spend some of the $ I have collecting almost no interest.”

The word “Possible” is a warning. The cup never broke out upward, at least not before I bought. The stock retraced its gains, dropped as low as 12 cents above the bottom of the cup, and recovered.

During July 2010, I worried over the stock. “5 July. I don't know what to do with this stock. I can see it going down to 2. One insider bought at $5.94, 41k shares, and the stock is about a buck lower. If this breaks support at 4.18, then it's a sell. I put a [conditional order] to sell at 4.13, until 6 September 2010. The price is just below the low in February.”

From 7 July to a week later, I raised the stop almost daily. “I am canceling the stop because the market wants to go higher and this still has great upside potential.”

The stock formed another cup throughout 2010, another in 2011–2012, and finally broke out upward in the summer of 2012.

The stock moved higher, not a straight-line run upward, but a nice climb nonetheless. My notes to the buy said the stock targets were 8, 10, 17, and 20. I bought at 6.52, and when the stock started moving up, it was at about 8.50 (it had pierced the resistance at 8). The stock paused at 10 (as predicted), blew past 17 to reach 19 where it retraced, and moved sideways with a floor of about 16.

Fast forward to 26 September 2015. “Sell reason: Diversification. Zacks says the company is overloaded with debt, and another broker report says debt is above industry average. If this stock should DCB [dead-cat bounce], it would be a tragedy, but it only makes up 8% of my portfolio. Nonetheless, it's time to sell a bit. The stock hasn't done anything since 2014, so maybe it's time to find something that will do well going forward.”

I made 195% on the trade, almost the triple I was looking for.

- Lesson: Sometimes mistakes turn out well.
- Lesson: If a stock isn't performing as expected, consider selling but also recognize that stocks need time to regroup before moving higher, especially after sharp gains.

Sample Trade

Cody is in high school. He is not sure what he wants to do for a living, but he still has a few years to figure it out before he graduates. When he is not chasing cheerleaders, he either has his nose buried in the financial websites or is reviewing charts on the computer screen. His interest in stocks follows in his father's footsteps: The man works for a brokerage firm and taught Cody the ropes.

Although Cody does not belong to the investment club at school, he pals around with the players. One day, he overheard them talking about the stock pictured in Figure 21.5. At first he did not think much about it until he looked deeper. That is when he saw a cup-with-handle pattern.

He was not convinced the stock was a good trade, and did not have the money to buy it anyway. He decided to paper trade it to see what he could learn. On the daily time scale, he saw an inner cup forming at point C, so that is the one he decided to trade.

Week after week, he waited for the buy signal that did not come. Eventually, the stock climbed above the right cup rim but he missed it. When he pulled up the stock chart on his computer, a throwback had already occurred. So he waited for price to climb above the cup rim again.

That happened on 9 May, his girlfriend's birthday. Sensing a positive omen, he made a notation to buy the stock, on paper, at the closing price the following day (filled at 15.25). When he met his girlfriend the next day, she was not impressed with the birthday present he gave her, and the stock closed lower as well.

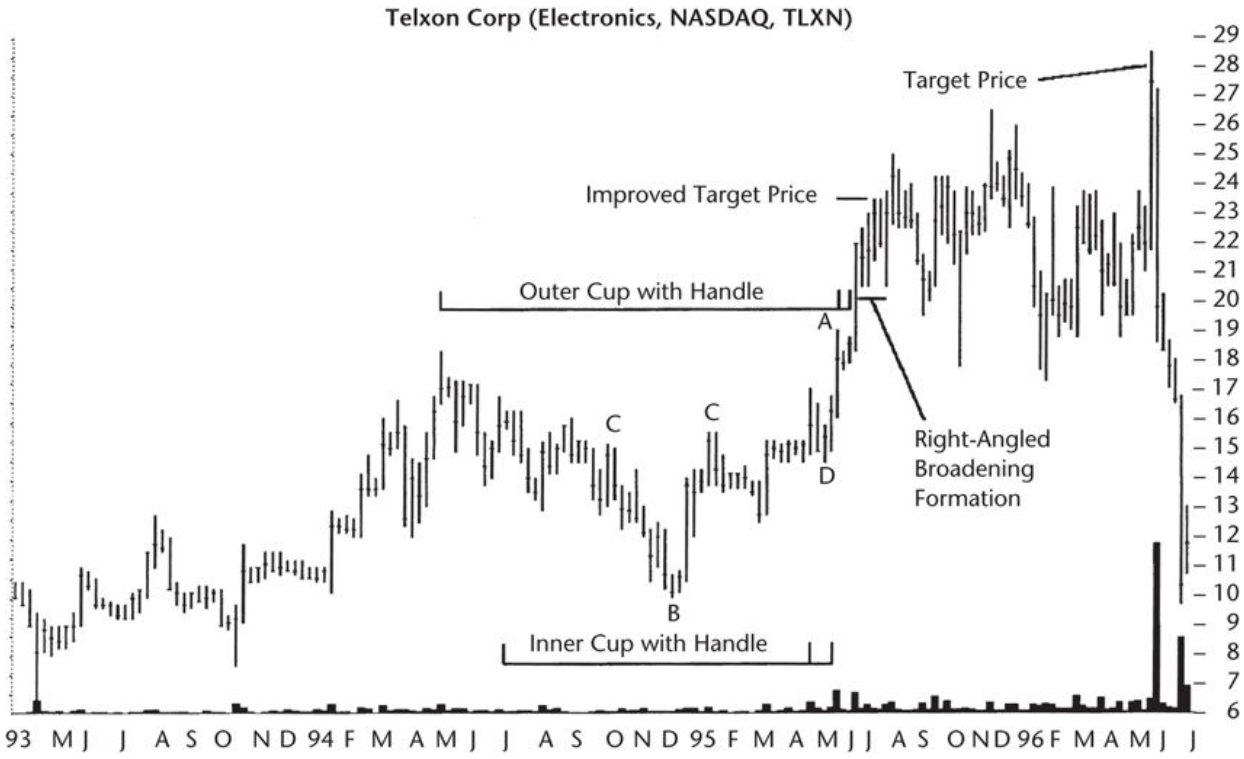


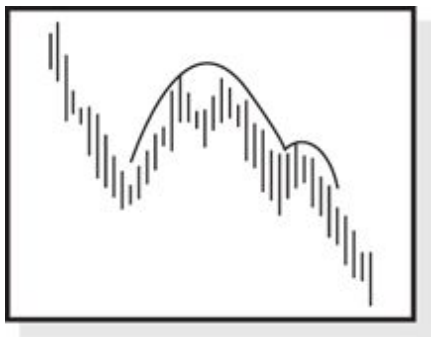
Figure 21.5 Here is an example of the measure rule in practice on the weekly scale. Trade the inner cup-with-handle formation for a better entry price.

Two weeks later, the stock was moving up. Cody placed his stop 15 cents below the handle low, at 14.38 (point D, which also marks the purchase point). When the stock climbed above the outer cup, he raised the stop to 17.50. Then he noticed a problem forming: a right-angled broadening top formation. “It was a bearish signal, so I raised my stop to just below the base at 20.25.”

Then he waited.

He got word that the stock was in trouble from his pals. They were not too happy with the company for some reason. When he pulled the stock up on his computer screen, he noticed that it had hit his stop in late August when price momentarily dipped. Cody whipped out his calculator and tallied up his gains. He made $5 a share for a gain of over 30%. He chuckled to himself that next time he would use his paper profits to buy his girl something other than cubic zirconium.

22
Cup with Handle, Inverted



RESULTS SNAPSHOT

Appearance: Price follows the shape of an inverted cup followed by a handle.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Performance rank	6 out of 36	7 out of 19
Breakeven failure rate	18%	9%
Average decline	17%	23%
Volume trend	Downward	Downward
Pullbacks	67%	60%
Percentage meeting price target	62%	62%
See also	Rounding tops	

To find this pattern, I had two things to work with: a picture of an idealized inverted cup from a website and one line of text describing it. That was enough. I searched through my databases for the pattern, created some identification guidelines, and then gathered statistics. The pattern performed better than I expected.

As the accompanying Results Snapshot shows, in bear markets the pattern has a 9% breakeven failure rate—ranking tenth out of 19 (not shown). The average decline is 23%, a good showing for a bearish pattern. The performance ranks are even better. They are close to the best performance (a rank of one).

The percentage meeting price target is based not on the height of the pattern, but on the height of the handle to boost the success rate. Subtract the handle's height from the right cup rim to get a target.

Let's whip out our magnifying glasses for a closer look.

Tour

Figure 22.1 shows an example of an inverted cup-with-handle pattern (icup). The pattern looks like a rounded top but includes a handle on the right side of the pattern. This particular handle is narrow and tall, retracing (from A to B) a significant portion of the decline from the top of the pattern to the right cup rim (point A). Price continues dropping, confirming the pattern as a valid one when it closes below the right rim. The figure shows price gapping lower (breakaway gap) on high volume, but do not expect such behavior. Once the icup confirms, price drops but usually not as steeply as that shown.

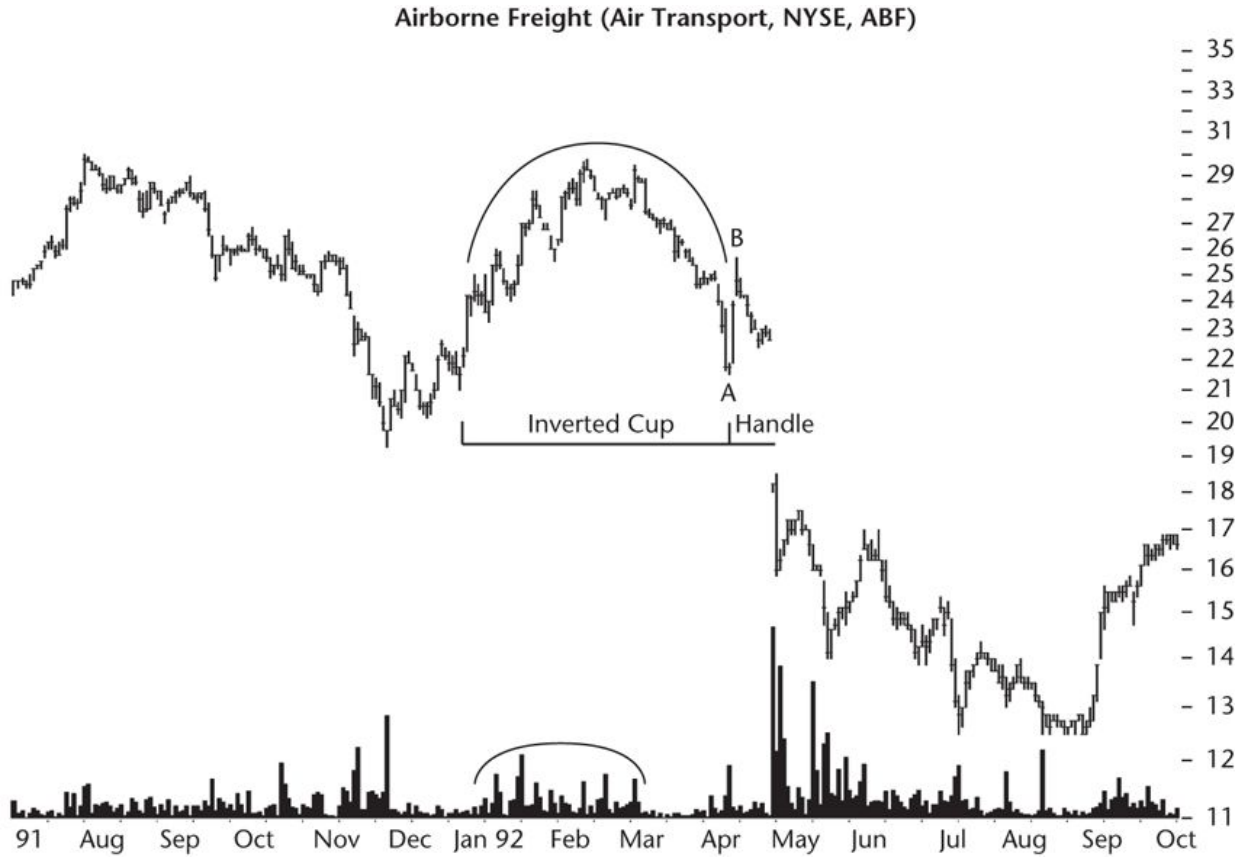


Figure 22.1 An inverted cup-with-handle pattern appears along with dome-shaped volume. The handle retraces the decline by rising from A to B, and then price moves lower before gapping below the right cup rim, confirming the pattern as valid.

Identification Guidelines

Table 22.1 shows identification guidelines for icups. Refer to Figure 22.2 as I discuss them.

Table 22.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price follows the shape of an inverted cup followed by a handle.
Rounded cup	Look for a smooth, rounded cup, but accept deviations.
Cup rims	The starting and ending points of the cup should stop near the same price, usually less than a few percentage points apart.
Cup handle	Between the right cup rim and the breakout is the handle. It can be any length. The median is 30 days long.
Cup retrace	Price in the handle must not climb above the top of the pattern but should bounce upward. The three most frequent retrace amounts land between 30% and 40%.
Breakout direction	Downward when price closes below the right cup rim.
Confirmation	The pattern is valid only after a downward breakout.

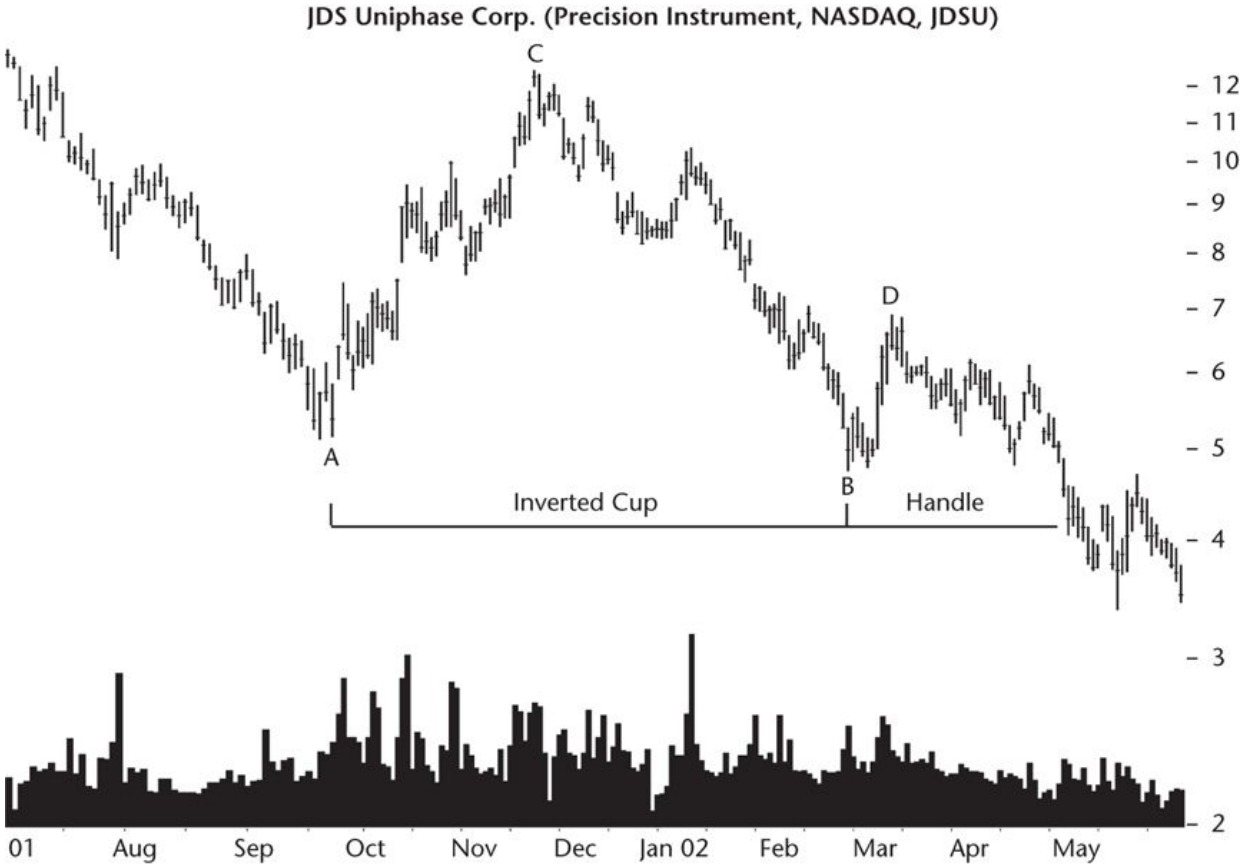


Figure 22.2 This inverted cup has a V-shape and a handle that mirrors the cup's shape.

Appearance. Imagine a teacup flipped upside-down with the handle on the right. That's what an icup pattern looks like.

Rounded cup. I did not check the performance of rounded cups versus V-shaped ones. However, I tried to limit my selections to the rounded shape. I consider Figure 22.2 to have the V-shape (but used it in the study anyway) and the other figures in this chapter to be rounded-looking. You may find it easier to picture an inverted teacup or coffee cup in your mind as you search for the pattern.

Cup rims. The cup rims are points A and B in the figure. Few patterns I looked at had the same price across the rims. Price in the bottom of the pattern varied by a median of 2%.

Cup handle. I define the cup handle as the price movement from the right cup rim to the breakout (that is, until price closes below the level of the right cup rim). In the figure, the handle is from point B until

almost May. The handle length is a median of 30 days, so that gives you some idea of how long handles can be. Expect variations.

Cup retrace. I followed two rules: (1) the handle could not rise above the cup top, and (2) there must be at least some rise—a bounce to the stock after the right rim hits bottom. The most common retrace is listed in the table. That is, price climbed up a portion of the cup (during creation of the handle) before returning to the breakout.

Breakout direction. You must wait for the breakout with this pattern before trading. Too many of the patterns I looked at had price moving upward instead of downward, especially in bull markets. A breakout is a close below point B, the lowest low on the right rim.

Confirmation. The pattern confirms when price closes below the right rim (stages a downward breakout).

Figure 22.3 shows another example of an inverted cup-with-handle. This icup has uneven rims and a top that is really an Eve & Eve double top chart pattern with a diamond bottom (not highlighted) nestled between those two peaks.

The inverted cup makes a gentle swing upward from A to B. Points A and B are 9% apart in price. That is wider than I like to see, but I consider it a valid icup. The handle forms a second bump well below the main cup, but this one has an irregular shape.

Focus on Failures

What do failures look like, and what causes them? **Figure 22.4** shows one type of failure—an identification failure. The cup appears in an upward price trend, suggesting it will act as a reversal after a downward breakout. The cup itself is rounded with rims that bottom 5% apart in price. That is close enough for government work, as the saying goes. The pattern qualifies as an icup with one glaring exception. Do you know what it is?

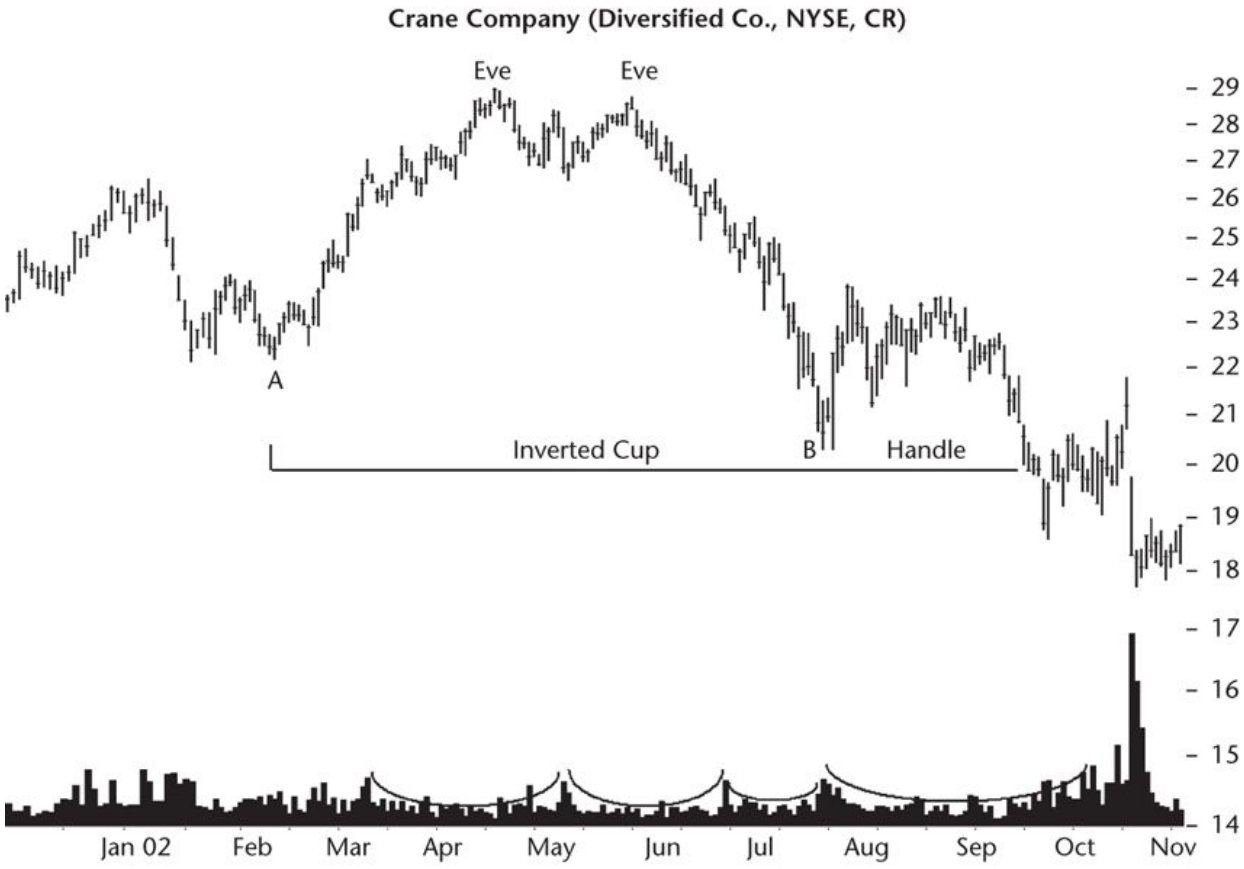


Figure 22.3 This inverted cup-with-handle has uneven rims and U-shaped volume.

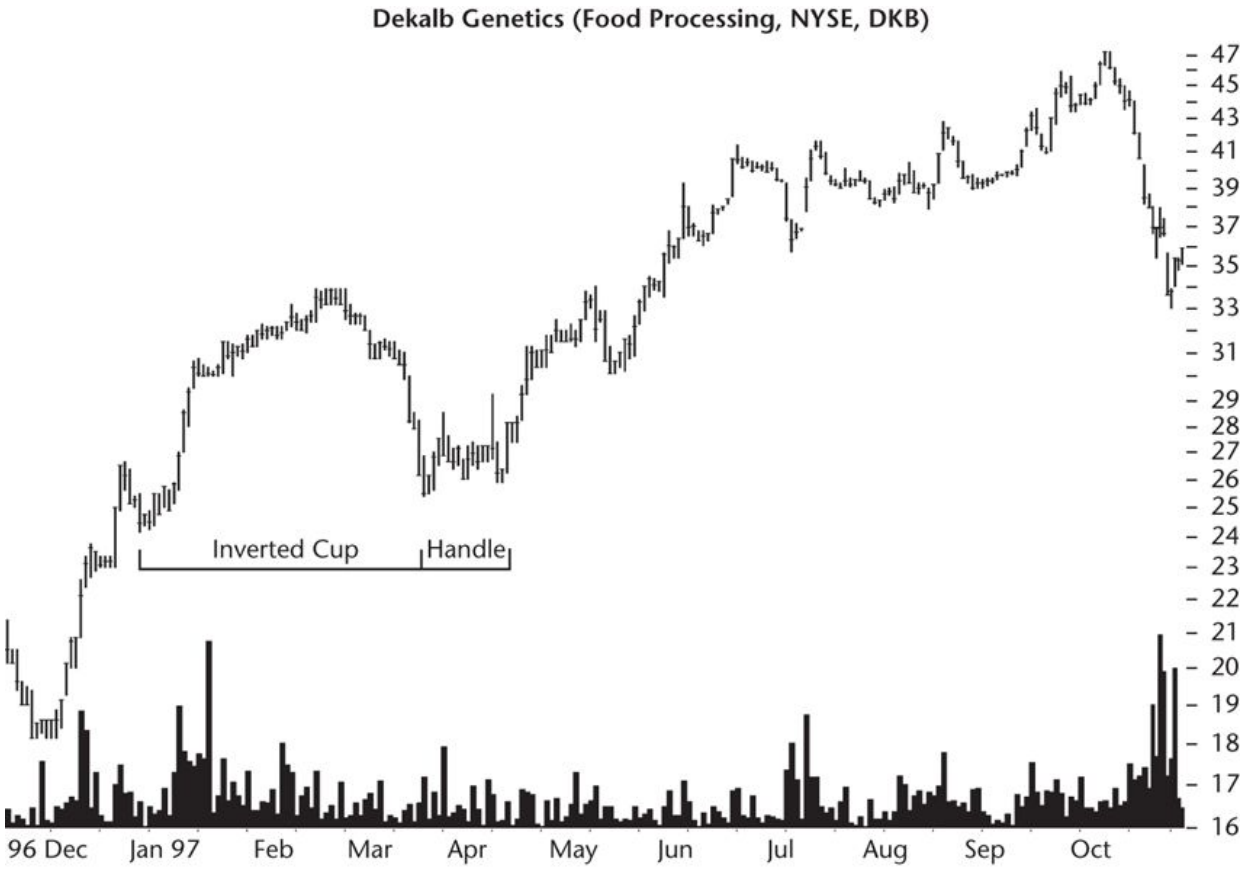


Figure 22.4 This is not an inverted cup-with-handle because price fails to close below the right cup rim and confirm the pattern. The breakout is upward, not downward.

As you probably guessed, the breakout is upward (it should be downward). Had you shorted the stock in the handle, you would be looking at a loss. The image is a glaring example of why you should wait for the breakout, especially when considering a short sale.

Figure 22.5 shows the next example of a failed trade. Running through the identification guidelines, the price trend leading to the pattern is flat, but that's okay. The cup is rounded with rims at the same price. The handle has an upward bounce that measures 61%, close to the Fibonacci retrace of 62%. The breakout is downward, as required by the guidelines. However, price drops just 3% before rebounding.

What happened?

Looking back on the weekly scale shows extensive support and resistance beginning in mid-1999 (not shown) and lasting for a year at

6.50. That price is also where the rim of the icup formed. When the downward breakout occurred, price ran into stiff support and stopped declining 3% below the breakout.

This is a good example of how important stops are when trading short. After opening a short position, place a stop just above the prior minor high or above a nearby resistance zone. Do not place it too close or you will be stopped out on normal price volatility. Using a stop would have saved a trader from an embarrassing loss.

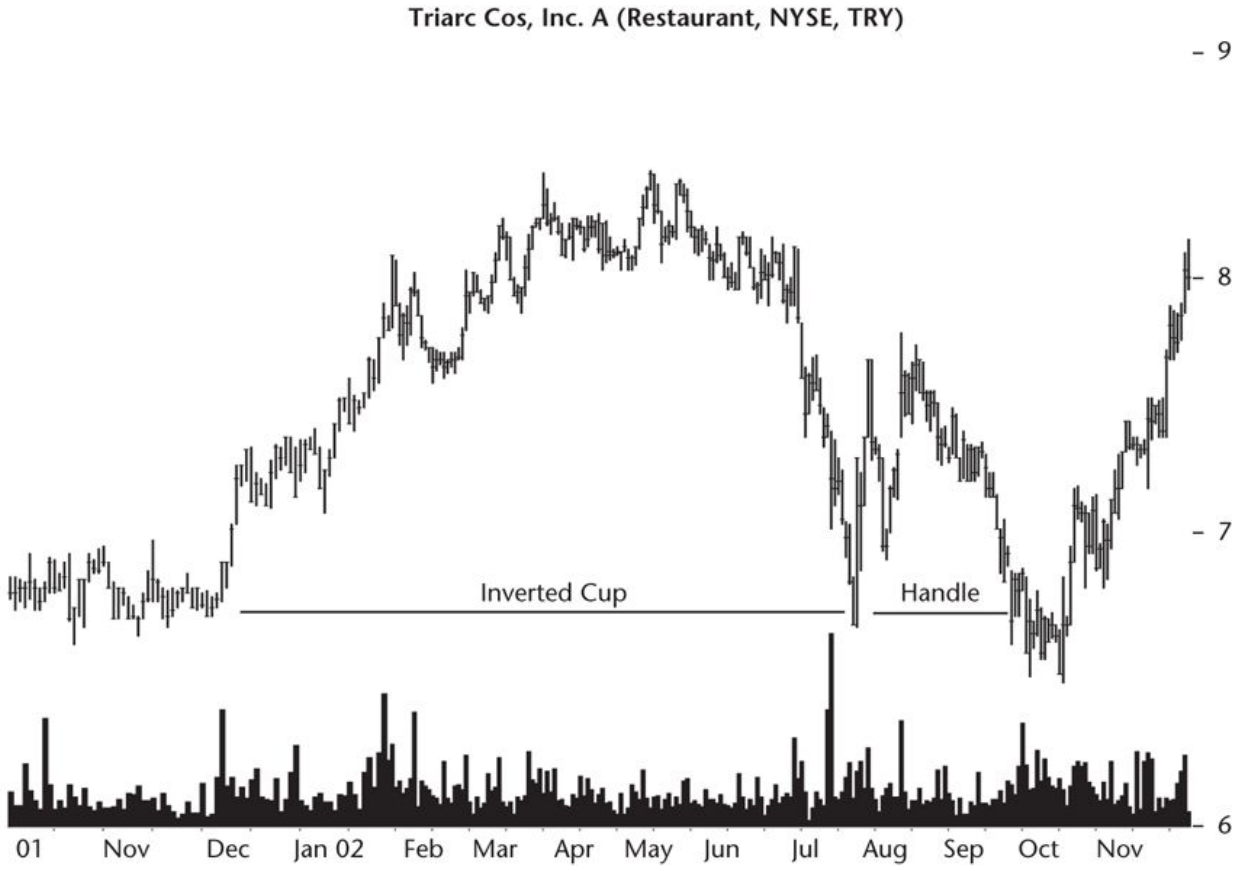


Figure 22.5 A large flat base before the start of the cup supported price and stopped the decline.

Why do these patterns fail? No one knows for sure and the reason varies from pattern to pattern. A good earnings report, one that beats expectations, will send a stock higher. Other fundamental factors such as good same-store sales, the win of a new contract, or even a takeover bid by another company will stop a decline.

Statistics

Table 22.2 shows general statistics for icups.

Number found. I found the first pattern using data from August 1991 to November 2017 in 591 stocks and catalogued 944 patterns. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. In bull markets a slight majority act as reversals of the upward trend. In bear markets, the pattern acts as continuation patterns half again as often as reversals.

Reversal/continuation performance. The performance difference between icups acting as reversals and continuations is minor: two percentage points in bull markets and no difference in bear markets. Statistical differences of a percentage point or two are common for downward breakouts in all pattern types.

Average decline. The performance of this pattern is above the averages posted by other bearish chart pattern types. That's why the performance rank is as low as it is (low is good).

Standard & Poor's 500 change. You can see how the general market influenced the average decline. In bull markets, it helped the decline but only marginally. In bear markets, it helped dramatically, or so the theory says.

Days to ultimate low. I checked the velocity of the decline in bull and bear markets and found that price dropped 2.5 times as fast in bear markets as in bull ones. Trade with the trend (downward in bear markets).

Table 22.2 General Statistics

Description	Bull Market	Bear Market
Number found	556	388
Reversal (R), continuation (C) occurrence	55% R, 45% C	39% R, 61% C
Reversal, continuation performance	–16% R, –18% C	–23% R, –23% C
Average decline	–17%	–23%
Standard & Poor's 500 change	–1%	–11%
Days to ultimate low	63	34
How many change trend?	35%	57%

How many change trend? Values above 50% are terrific for upward breakouts, but they are very rare for downward breakouts. And yet we see that 57% of icups in bear markets see price drop more than 20% (a trend change). That's exceptionally good. Even the bull market drop beats the average of 28%.

Table 22.3 shows failure rates for icups. I found that in bear markets just 9% of the icups failed to see price drop more than 5% after the breakout. As you scan down the list, notice that failure rates skyrocket. Twenty-one percent will fail to see price drop more than 10%. That's double the prior row's failure rate.

The bull market numbers for the first two rows are double the bear market rates. Half (52%) will fail to see price drop more than 15%. If you want to make money trading this pattern, then concentrate on finding it and trading it in bear markets.

Table 22.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is downward from the icup. The breakout occurs when price *closes* below the right cup rim.

Yearly position, performance. Does performance change depending on where in the yearly price range the breakout occurs? The answer seems to be that the lower the breakout appears in the

yearly price range, the better the performance. That's clear in bull markets, but bear markets muddle the numbers.

Pullbacks. A pullback occurs between 60% and 67% of the time, on average. During the average pullback, price drops 5% to 9% below the breakout in 6 days before returning to (or coming close to) the breakout price for a round-trip of 12 days.

When a pullback occurs, performance suffers. You can see the effect in the table. Look for nearby support zones—regions that might repel the downward move before taking a position in the stock.

Table 22.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	98 or 18%	34 or 9%
10	122 or 40%	48 or 21%
15	67 or 52%	47 or 33%
20	80 or 66%	38 or 43%
25	51 or 75%	58 or 58%
30	42 or 83%	46 or 70%
35	34 or 89%	37 or 79%
50	51 or 98%	65 or 96%
75	11 or 100%	14 or 100%
Over 75	0 or 100%	1 or 100%

Table 22.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –19%, M –14%, H –7%	L –23%, M –23%, H 0%
Pullback occurrence	67%	60%
Average time to pullback bottoms	–5% in 6 days	–9% in 6 days
Average time to pullback ends	12 days	12 days
Average decline for patterns with pullbacks	–15%	–21%
Average decline for patterns without pullbacks	–21%	–26%
Percentage price resumes trend	61%	48%
Performance with breakout day gap	–17%	–25%
Performance without breakout day gap	–17%	–23%
Average gap size	$0.83	$0.87

Table 22.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–18%	–23%
Short pattern performance	–16%	–23%
Median height as a percentage of breakout price	28.8%	44.2%
Narrow pattern performance	–17%	–23%
Wide pattern performance	–17%	–23%
Median width	134 days	139 days
Short and narrow performance	–17%	–22%
Short and wide performance	–15%	–23%
Tall and wide performance	–18%	–23%
Tall and narrow performance	–18%	–24%

Gaps. Icups with gaps show improved performance after the breakout, but only in bear markets.

Table 22.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones, but the performance is marginal and it applies only to bull markets. To use this observation, compute the formation height by taking the difference between the top of the icup and the lower of the two rims and then dividing the height by the price of the right rim low. If the result is higher than the median shown in the table, then the pattern is tall. Otherwise, it's short.

Width. I didn't see any performance difference after sorting the patterns by width.

Height and width combinations. Tall patterns perform better than short ones, but the differences aren't substantial.

Table 22.6 shows volume-related statistics.

As you scan down the table, notice that the performance difference is minor, regardless of which category you are looking at. Thus, volume

is not a good predictor of performance of the icup, at least for the samples I used in the study. Bear markets show no performance difference at all.

Volume trend. Volume trends downward most often, but the results are about random. Don't throw away a pattern just because volume trends upward.

Rising/Falling volume. Patterns with falling volume in bull markets tend to see price decline a bit more than for their rising-volume counterparts.

Breakout day volume. Light breakout day volume helps performance (bull market only), but the performance boost is negligible. Market lore says heavy breakout day volume helps performance, but we don't see that here, nor in some other chart pattern types.

Table 22.7 shows how often price reaches a stop location. You can use these numbers to help locate where a stop-loss order should be placed to protect profit and limit losses.

Table 22.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	52% down	53% down
Rising volume trend performance	–16%	–23%
Falling volume trend performance	–18%	–23%
Heavy breakout volume performance	–17%	–23%
Light breakout volume performance	–18%	–23%

Table 22.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	0%	0%
Middle	9%	3%
Pattern bottom	78%	72%
Handle high	11%	6%

I checked how far price climbed after a downward breakout on the way to the ultimate low. I *did* find one pattern in a bull market that made it back to the top of the icup, but it didn't make an impact on the numbers shown (0% shown).

If you place a stop order at the top of the highest peak in the handle, your stop will be triggered between 6% and 11% of the time on average as price searches for the ultimate low. You can see the hit rates for other locations in the pattern.

Table 22.8 shows the performance over three decades.

Performance over time. Because bear markets only occurred in the 2000s, the numbers are not included in the table. The 2010s showed the best performance for icups and the 2000s showed the worst.

Failures over time. As one might expect, failures were highest in the 2000s and lowest in the 2010s. That makes intuitive sense because performance was worst in the 2000s (more failures) and best in the 2010s (fewer failures).

Table 22.9 shows busted pattern performance.

Table 22.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–17%
2000s	–16%
2010s	–19%
Performance (above), Failures (below)	
1990s	18%
2000s	20%
2010s	14%

Table 22.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	163 or 29%	39 or 10%
Single bust count	143 or 88%	31 or 79%
Double bust count	5 or 3%	1 or 3%
Triple+ bust count	15 or 9%	7 or 18%
Performance for all busted patterns	47%	54%
Single busted performance	53%	67%
Non-busted performance	N/A	N/A

Busted patterns count. The icup pattern has comparatively few busted patterns, especially in bear markets.

Busted occurrence. Of the patterns which bust, most of them are single busted patterns, but notice that triple busted patterns (triple+, which means busted more than twice) place second.

Busted and non-busted performance. Because icups only break out downward, there are no non-busted icups to compare the results to. Single busted patterns perform better than one, two, and triple+ (combined).

Trading Tactics

Table 22.10 shows trading tactics.

Measure rule, targets. To get the measure rule to give good success rates, I decided to use the height in the handle subtracted from the right rim low as a target. Ignore values below zero and convert the height as a percentage of the right rim low to see if the projected decline is reasonable. Use Table 22.3 to determine the chance of price declining that far.

Table 22.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the *handle height* (not cup height), then subtract it from the price of the right rim low. The bottom portion of the table shows how often the measure rule works.
Head-and-shoulders	Look to the left of the cup to see if another handle appears. If so, this might be a head-and-shoulders top with handles as shoulders.
Open short	When price closes below the right rim low, short the stock. Only experienced traders should short a stock.
Close short	If price declines quickly, several points in a few days (almost vertical), consider closing the short position. Price usually rebounds after such quick declines (forming V-bottoms, a chart pattern).
Trendline	Draw a trendline down from the handle. When price closes above the trendline, cover your short.
Measured move down	The handle may be the corrective phase of a measured move down. Sell when price nears the amount of the first leg decline.
Stop location	See Table 22.7 for hints on where to place a stop-loss order.
Busted trade	See Table 22.9 for guidance.

Description	Bull Market	Bear Market
Percentage reaching half height target	83%	81%
Percentage reaching full height target	62%	62%
Percentage reaching 2× height	36%	31%
Percentage reaching 3× height	20%	19%

For example, suppose the handle price peaks at 20 and the breakout (the low at the right cup rim) is at 17. Subtract the difference, 3, from the right cup rim, 17, to get the target price of 14. A drop of 3 points in

a $17 stock is a drop of 18%, which sounds reasonable. However, Table 22.3 shows that in bull markets, about 60% of stocks will fail to see price drop that far.

The lower portion of the Table 22.10 shows how often various heights change the success rate. Using the full height like I did in the example, price will reach the target 62% of the time, on average. Of course, your mileage may vary.

Head-and-shoulders. Look to the left of the cup to see if another handle looks like the one on the right. If so, then you may have a head-and-shoulders top. Consult the head-and-shoulders top chapter for more information on trading that chart pattern.

Open short. This reminds me of the time I tested my new circuit board for the Patriot air defense system. Each time I applied power to the board, the breaker tripped. I discovered that the layout people wired power to ground. *Oops*.

When price closes below the right rim low, open a short position. Be sure to use a stop or other method to exit the stock in case price rises.

Close short. If price drops quickly—a straight-line run of several points in a few days—consider closing out your short when price stops declining. Sometimes the snapback rally sees price rebound quickly.

Trendline. Another exit method is to draw a trendline down the right side of the cup, touching the top of the handle and extended lower. After a downward breakout, the slope of the decline will usually be steeper than the slope of that trendline (so price drops below the line). When price closes above the trendline, exit the trade.

If price forms a new trend downward, one steeper than the cup-to-handle trendline, draw a new down-sloping trendline along price peaks. When price closes above the new trendline, close out the position.

Measured move down. Look for a measured move down chart pattern. In some cases, the handle is the corrective phase of a measured move. If the second leg of the pattern mirrors the length or the first leg, be ready to close out the short. See the measured move down chart pattern for details.

Stop location. Consult Table 22.7 to see if placing a stop above the handle might work as a stop location. Before placing a trade, convert the potential loss into a percentage to see if you can tolerate the loss.

Busted trade. Icups that bust tend to make large moves upward during recovery. Trading a busted pattern might make more sense than trying eke out a small profit from shorting.

Sample Trade

Sam, short for Samantha, works as a blackjack dealer in Las Vegas. She takes the money earned from tips and invests it in the stock market. In the decade since she started tossing cards, she has built a tidy nest egg. **Figure 22.6** shows an inverted cup-with-handle dealt her and how she traded it.

The first thing Sam did was to qualify the pattern. Did it meet the identification guidelines listed in Table 22.1? Quickly running through them, we find that the cup looked rounded with rims uneven but not too far apart in price. The handle showed a distinct bump up (in May) but some distance away from the cup. She did not know if this made any difference. The handle retraced 69% back toward the high at A.

Patiently, she counted cards until the odds stacked in her favor. “When price closed below the right cup lip, I shorted the stock at 7.90. The following day's tall trading range bothered me, but the close was in the middle of the intraday range, so it was not a one-day reversal. Fortunately.”

Price eased down each day (but not quickly enough to suggest a sale), attempted a pullback at the start of July, but soon continued lower.

After a few weeks, “I drew a trendline down,” as shown in the figure.

“I measured the cup height and handle height as a kind of target window [both subtracted from the right rim low] but found that price had declined below the window. So I placed a stop-loss order at 6.10, a few cents above the brief pause in mid-July” [the “Cup Target” in the figure points to just above her stop price].

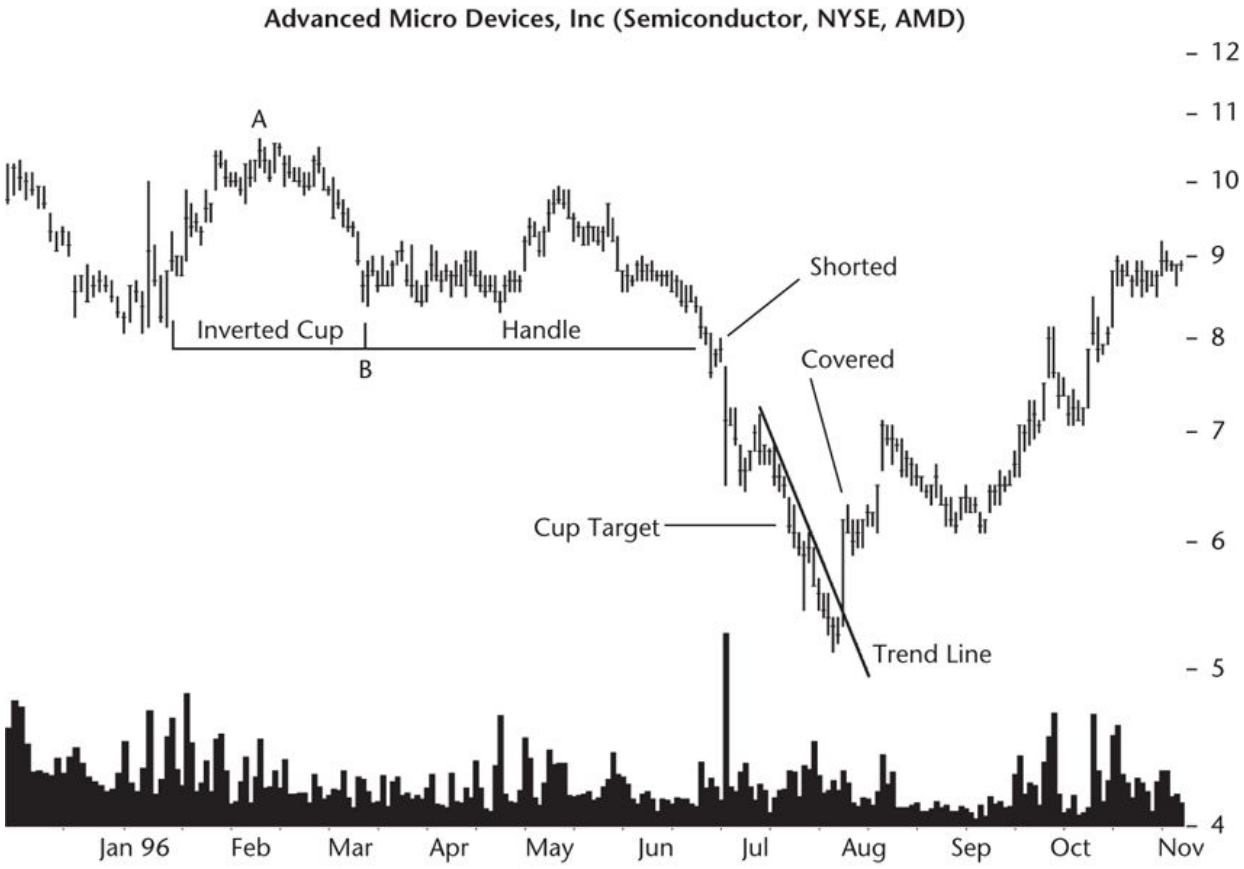
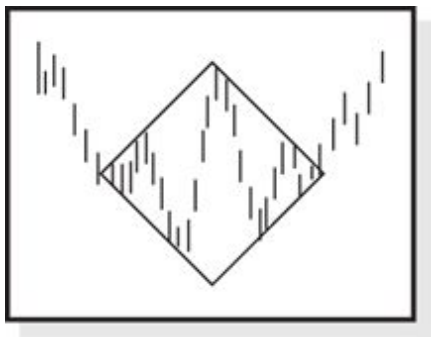


Figure 22.6 As described in the Sample Trade, Samantha traded this inverted cup-with-handle by drawing a down-sloping trendline as a sell trigger. A stop-loss order closed out her position automatically, though.

After her shift ended each night at the casino, she logged onto the Web and updated her chart. When price jumped upward in late July, the stop took her out at 6.10. She made about 22% after commissions.

23
Diamond Bottoms



RESULTS SNAPSHOT

Appearance: Diamond pattern forms after a downward price trend.

Upward Breakouts

Reversal or continuation	Long-term bullish reversal
Performance rank	27 out of 39
Breakeven failure rate	13%
Average rise	39%
Volume trend	Downward
Throwbacks	52%
Percentage meeting price target	73%
See also	Diamond tops

Downward Breakouts

Reversal or continuation	Short-term bearish consolidation
Performance rank	1 (best) out of 36
Breakeven failure rate	15%
Average drop	19%
Volume trend	Downward
Pullbacks	67%
Percentage meeting price target	55%

How is a diamond bottom like asking a girl out on a date? When dealing with either, it's all in the approach. Diamond bottoms have price entering the pattern from the top (heading down); diamond tops have price entering from the bottom, trending up. What more is there to know? Plenty, and the Results Snapshot just scratches the surface.

Based on what we see in the Results Snapshot, diamonds favor downward breakouts. They show the best performance of any chart pattern, but upward breakouts are closer to the worst performance. Breakeven failure rates (a measure of how often price fails to move more than 5% after the breakout) are close to one another, with downward breakouts suffering a bit more than upward breakouts.

Pull out a loupe and let's take a closer look at this chart pattern.

Tour

Figure 23.1 shows an example of what a diamond bottom looks like. Notice that price trends downward into the pattern, the diamond appears, and then price reverses in this example. Price dropping into the pattern from the top means it is a diamond bottom and not a top. I ignore any overshoot and undershoot in the week or two before the pattern begins. Overshoot and undershoot are like having a pullback or throwback precede the start of the pattern. See the Glossary for an example of overshoot or undershoot.

The diamond bottom begins with price tracing higher highs and lower lows, then the process reverses. The price range narrows until the breakout occurs.

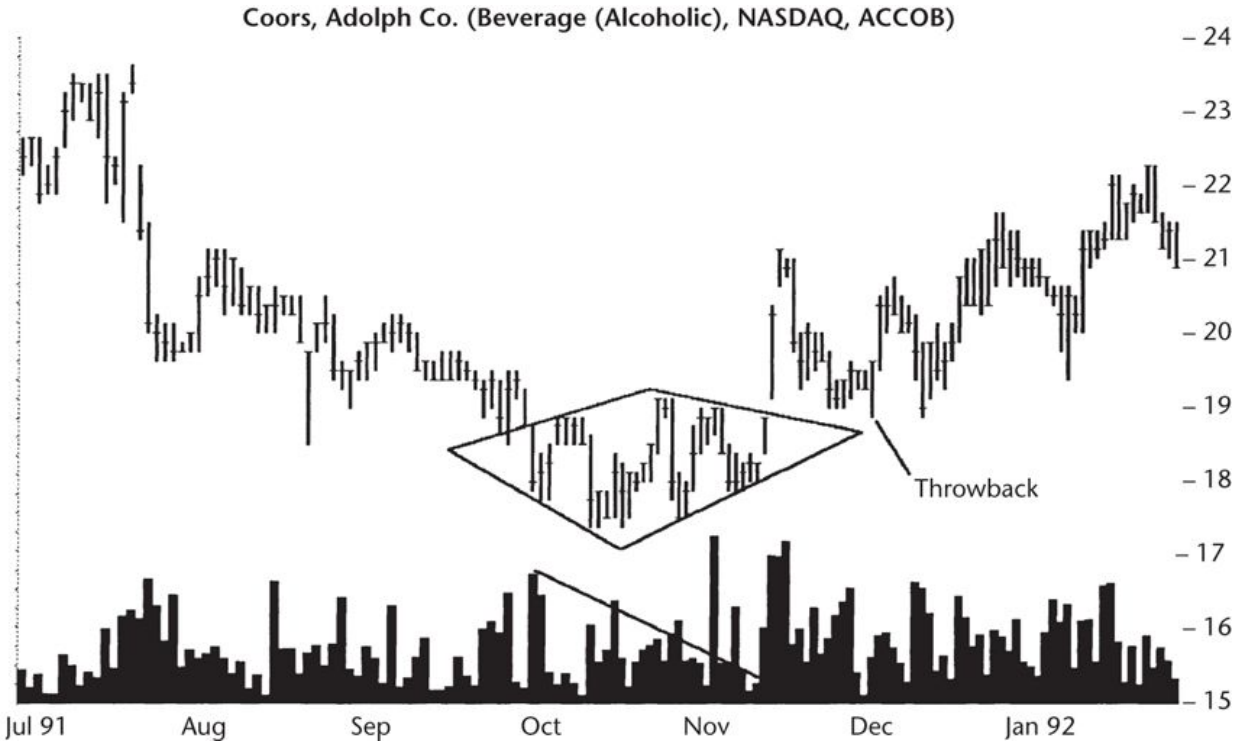


Figure 23.1 A diamond bottom reversal. Volume typically recedes through the formation until the breakout day. This is a two-diagonal diamond.

Volume throughout the chart pattern is diminishing. The breakout usually sports a significant rise in volume. The figure shows high volume on the breakout when price gaps through the diamond trendline boundary. (There are three gaps along the upward breakout

trend. The first is a breakaway gap, the middle one when price pierces the top trendline is a continuation gap, and an exhaustion gap ends the uptrend). In less than 3 months, the stock climbs over 20% to a high of 22.25.

A diamond bottom represents the struggle between buyers and sellers. Buying demand pushes price up to a new minor high until selling pressure forces price back down. If selling pressure is strong enough, price drops to a new minor low. The widening pattern continues, but usually not for many swings.

On the right half of the diamond, greedy holders—seeing a good price for the stock—sell, and the price rise stops, turns around, and drops. Sellers buy but do so before price makes a new low. They are excited about the stock and buy in before price can reverse and leave them without a position. This activity blunts the downward momentum and creates a higher minor low. Thus, price begins narrowing on the right side of the diamond.

Eventually, one of the warring parties will win, and overwhelming buying demand or selling pressure will cause price to break out of the diamond pattern. Price continues in the breakout direction until it pauses several points beyond the diamond boundary. For upward breakouts, the pause may be frightening enough that holders sell, driving the price back to the diamond trendline (a throwback).

For downward breakouts, buying demand from traders believing they are getting the stock at fire-sale prices creates a pullback. The smart money knows the score and takes the last opportunity to dump their holdings. This additional selling pressure forces the stock down again, usually for quite some time (weeks to months).

That is the life of a diamond.

Identification Guidelines

How do you identify a diamond bottom? Review the identification characteristics shown in **Table 23.1**.

The hardest part of identifying any pattern is seeing the shape price makes. For diamonds, they are especially difficult to identify. However, they occur many times at price turning points. Thus, look for diamond bottoms at the end of a downward price trend.

Appearance. When prospecting for diamonds look for price to widen out over time, forming higher highs and lower lows. The price pattern should look like a broadening bottom chart pattern. Then, price narrows, forming lower highs and higher lows. The second half should look like a symmetrical triangle. If you draw trendlines around the minor lows and highs, the result should appear diamond shaped. Don't expect perfection. More likely, the diamond's top or bottom will be pushed to one side as if a gust of wind was playing games.

Table 23.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price forms higher highs and lower lows in the first part of the pattern, then lower highs and higher lows. Trendlines surrounding the price action looks like a diamond. The diamond need not appear symmetrical.
Price trend	Price trends down into a diamond bottom. Ignore any overshoot or undershoot in the week or two before the diamond begins.
Volume	Downward from the start of the pattern to the end, with a surge during the breakout.
Breakout direction	Can be either up or down.

Also, I don't set a minimum trendline touch count. One of the trendlines may have only one touch (in a minor high or minor low). The other trendlines may have two touches, but the diamond shape should be apparent. Use the figures in this chapter as guidance.

Price trend. Since we are dealing with diamond *bottoms* and not tops, the prevailing price trend is downward leading to the diamond. Ignore any overshoot or undershoot in the week or two before the diamond begins when trying to gauge the inbound price direction.

Volume. Volume usually trends downward over the course of the pattern, but need not. Do not discard a chart pattern simply because volume trends upward instead of downward.

Breakout day volume is usually high—meaning it is above the 1-month average. Again, do not discard a diamond because the breakout volume is light instead of heavy.

Breakout direction. Price can break out in any direction but is upward most often. In Trading Tactics, I'll discuss a way to help improve determining the breakout direction using a single-diagonal pattern.

Figure 23.2 shows an example of a diamond bottom. The price trend is downward for nearly 2 months leading to the diamond. Price moves sideways as the diamond reversal forms, and the range widens as higher highs and lower lows appear. Then the tide turns and the range narrows; lower highs follow higher lows. The diamond pattern takes shape after connecting the boundaries of the price movement with trendlines. This is a pretty-looking diamond with price crossing the pattern from top to bottom, filling the whitespace with price movement.

Volume throughout the diamond is receding. This occurrence is typical but not a prerequisite for a well-formed diamond bottom. Volume usually surges on the breakout. The figure shows that breakout volume is four times the prior day but is just slightly above average for the stock.

Figure 23.2 A diamond bottom with receding volume trend. Price quickly recovers and reaches new highs. This is a two-diagonal diamond.

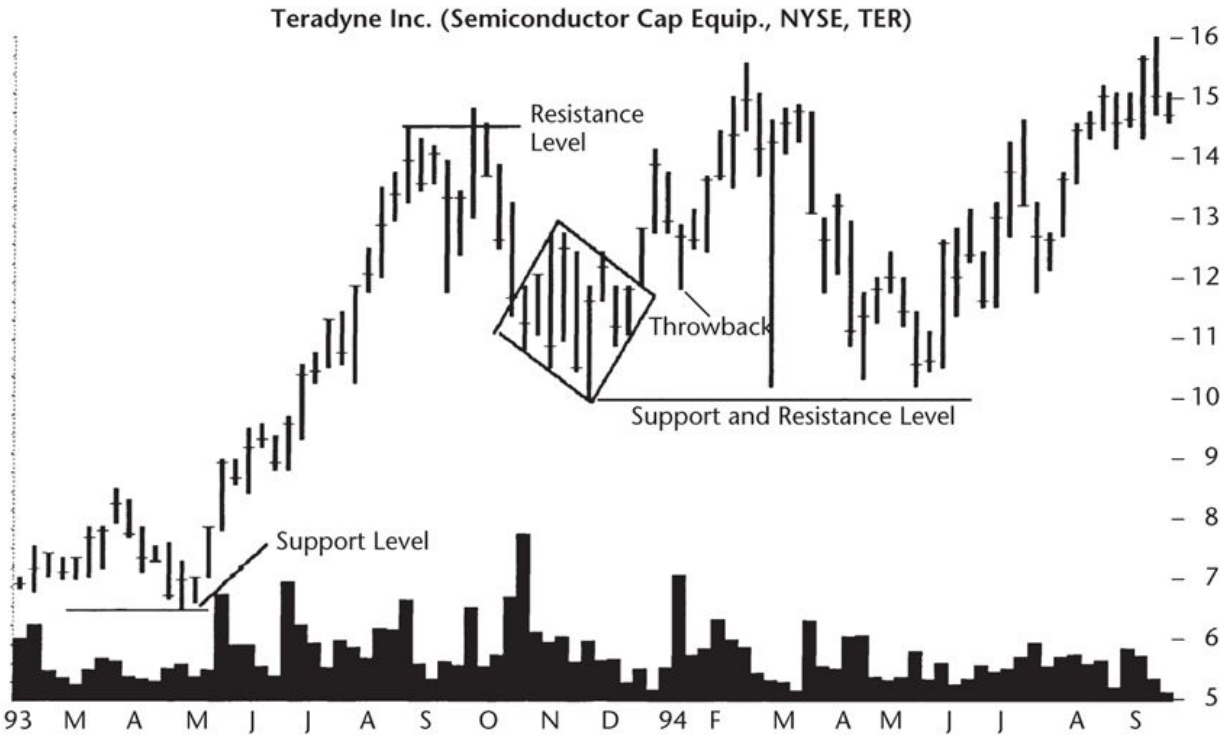


Figure 23.3 Support areas for diamond bottoms are near the base of the pattern. Shown here is support at 10 on a weekly scale.

Figure 23.3 (weekly scale) illustrates the support area often promoted by diamond bottoms, in this case at $10. Although support varies from diamond to diamond, when it appears after a diamond bottom, it is usually near the base of the diamond.

Another area of support commonly appears when the stock throws back to the level of the breakout. The figure shows an example of this (if you ignore the weekly scale and the requirement that a throwback must return to the breakout price within a month).

During a throwback, price climbs away from the diamond after the breakout, reverses course, and heads lower. Support meets the stock at the apex of the right half of the diamond (think of the apex of a symmetrical triangle), usually stopping briefly near the breakout price, then price turns around again and climbs. A throwback to the diamond happens about half the time and represents another opportunity to initiate a trade or add to an existing position.

Figure 23.4 shows another example of a well-formed diamond bottom. Quarterly earnings were released on 9 May and the stock reacted at D by forming a breakaway gap on high volume. The stock

formed a two-diagonal diamond (more about that later) at ABC with a breakout at E. Price pulled back to F and bottomed at G, 11% below the breakout price. Measured from the close the day before gap D, the stock lost 37% of its value. That was the reaction to just *one* earnings report that the market didn't like.

However, the stock recovered. In fact, the continuation gap at H, opposite D, was the next quarterly earnings report. The two gaps set off the diamond as an island bottom reversal. The stock continued to recover as if the D earnings had never happened. Traders or investors who sold as price dropped to G were probably kicking themselves and yelling at the company when price climbed to a new yearly high in November.

Focus on Failures

Diamonds have one type of failure that I call a 5% failure. A 5% failure happens when price breaks out and travels no more than 5% before reversing. Price after the reverse may move more than 20% or close at the other side of the pattern (bottom of the pattern for upward breakouts or above the pattern for downward breakouts).

Figure 23.4 A diamond bottom acts as a continuation of the downward price trend. This is a two-diagonal diamond.

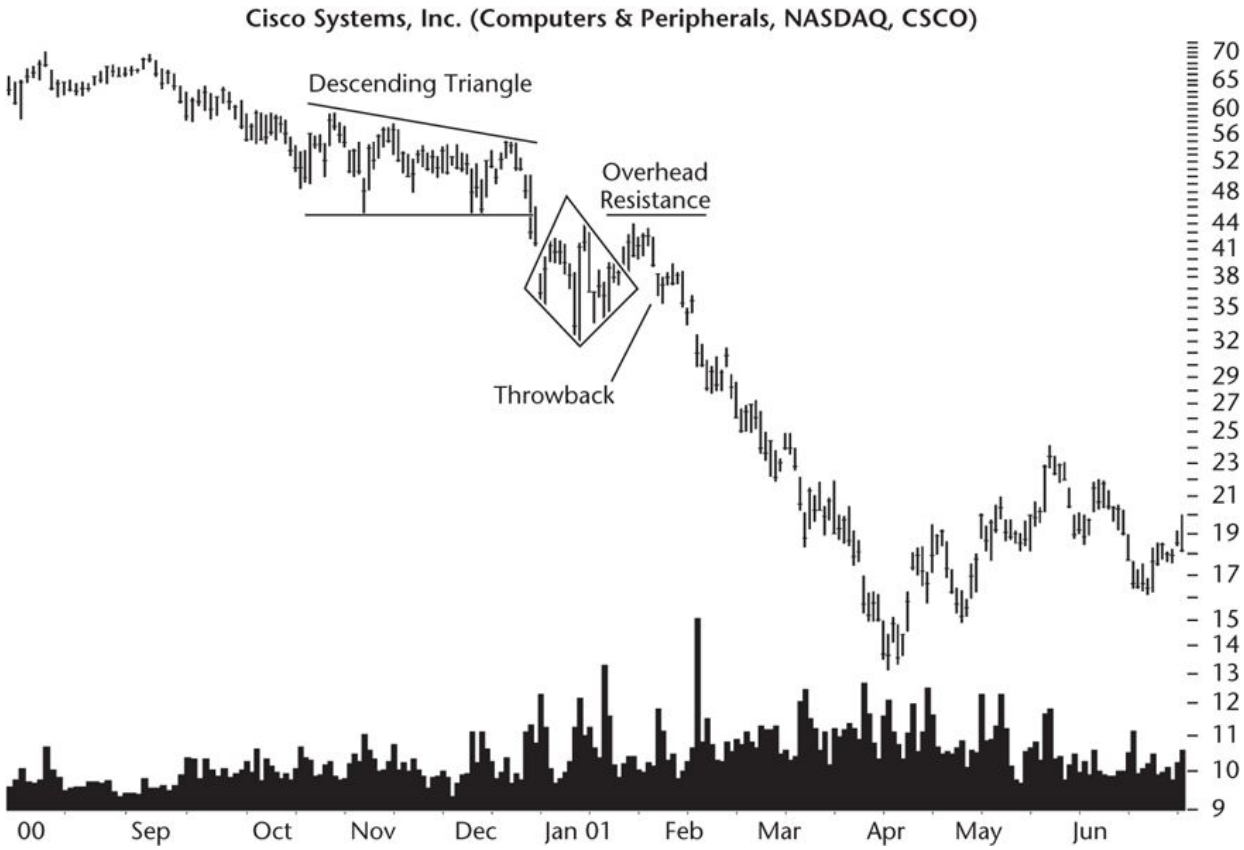


Figure 23.5 Overhead resistance blocks the upward breakout from this diamond bottom. This is a single-diagonal diamond.

Figure 23.5 shows an example. Is this a valid diamond? Price trends downward into the pattern, the diamond shape is clear, but volume trends upward (higher on the right than the left). Is the rising volume trend cause for concern? No. Breakout day volume is also low instead of high, but who's counting? Everything looks fine except for volume. If this were my trade, the volume anomalies would not even register. I would be more worried about something else. Do you know what it is?

Look at the figure again. See that descending triangle hanging above the diamond like an approaching storm? Although you may not recognize the triangle pattern, you should be on the lookout for overhead resistance. That solid block of near-horizontal price movement starting in October—where the triangle begins—to December where it ends, would scare me off. The only way I would take this trade would be to short it once price turned down at the triangle.

That is essentially what happened. Price broke out upward and the massive overhead resistance stopped the rise. Price threw back to the diamond but kept going down. Let me also mention that this pattern occurred in the middle of a bear market. So, we had a bear market sucking price lower, a falling price trend leading to the diamond, and massive overhead resistance. The only surprise would be if the price floated like pumice instead of sinking as does a diamond tossed into a pond. Your job as a trader is to find the gems that float.

Table 23.2 General Statistics

Description	**Up Breakout**	**Down Breakout**
Number found	351	126
Reversal (R), continuation (C) occurrence	100% R	100% C
Average rise or decline	39%	–19%
Standard & Poor's 500 change	11%	–3%
Days to ultimate high or low	182	40
How many change trend?	56%	39%

Statistics

Table 23.2 shows general statistics.

Number found. I found diamonds starting in September 1991 through October 2019 in 419 stocks. Not all stocks covered the entire period, and some no longer trade. After removing 119 bear market cubic zirconium (too few to report on), I was left with 477 bull market patterns. That's not a lot of samples. With just 126 breaking out downward, it suggests the low sample count may be the reason for the good performance of this chart pattern. *Hmm*. Something to ponder.

Reversal (R), continuation (C) occurrence. Because price must enter the diamond from the top (trending down, by definition), an upward breakout means it's a reversal. Downward breakouts act as continuation patterns.

Average rise or decline. The average rise is below the 42% we see for most other chart pattern types, but the average decline is higher than the 15% loss for other chart pattern types (hence the number-one performance rank highlighted in the Results Snapshot at chapter start).

Standard & Poor's 500 change. I measured the performance of the index from the date of the diamond's breakout to the ultimate high or low. If you think that the market trend helps a pattern's post-breakout performance, then the move in the index did just that. A rising tide lifts all boats in a rising market and you hear a giant sucking sound in a falling market.

Days to ultimate high or low. I measured the velocity from price rising 39% in 182 days and compared that to a 19% drop in 40 days. Result: The drop is 2.2 times as fast as the rise. Neat, huh?

How many change trend? I like to see values above 50% for this item. Upward breakouts frequently see patterns with that kind of performance (in this case, 56% of diamonds with upward breakouts see price rise more than 20% after the breakout). The 39% seeing price drop more than 20% after a downward breakout is quite good, too. In fact, it's probably better than good (the average for other chart pattern types is 28%, so yes, diamonds do particularly well).

Table 23.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	46 or 13%	19 or 15%
10	44 or 26%	28 or 37%
15	32 or 35%	17 or 51%
20	34 or 44%	13 or 61%
25	25 or 52%	11 or 70%
30	23 or 58%	8 or 76%
35	26 or 66%	12 or 86%
50	35 or 75%	13 or 96%
75	34 or 85%	4 or 99%
Over 75	52 or 100%	1 or 100%

Table 23.3 shows how often the pattern fails. For example, 13% of diamonds in bull markets with upward breakouts fail to rise more than 5%. A total of 26% fail to rise more than 10%. One last example for downward breakouts: Half (51%) fail to see price drop more than 15% after the breakout.

Notice how quickly the failure rate increases for small changes in the maximum price rise or decline. Moving from a 5% max to a 10% one, failures double.

Table 23.4 shows breakout-related statistics.

Breakout direction. I don't know why, but the 74% of diamond bottoms breaking out upward fascinates me. Maybe I need to get out more.

Yearly position, performance. Where are the best performers located in the yearly high–low price range? Diamonds that perform best break out in the middle of the range. My guess is that additional samples would tilt the scale to the lower third of the range, but that's just a guess.

Throwbacks and pullbacks. Throwbacks and pullbacks—when price returns to the breakout price or diamond border within a month

—occur over half the time.

When a throwback or pullback occurs, it takes 12 to 13 days on average to complete the move back to the breakout price. Performance suffers if a throwback or pullback appears, too.

To avoid a throwback or pullback, look for overhead resistance or underlying support before trading. Avoid the diamond when congestion is nearby.

After the throwback or pullback ends, price rises most often. That's bad news after a pullback, though (46% continue lower, meaning price rises the other 54% of the time).

Gaps. I compared the performance of diamonds with and without breakout day gaps. Most often, gaps help performance and that's what we see with diamond bottoms, too. I used the opening price the day after a gap in the measure to the ultimate high or low. Thus, you can buy into the trade after the gap appears to participate in the better-performing move.

Table 23.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	74% up	26% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 40%, M 40%, H 35%	L –19%, M –22%, H –14%
Throwbacks/pullbacks occurrence	52%	67%
Average time to throwback/pullback peaks	7% in 5 days	–8% in 5 days
Average time to throwback/pullback ends	12 days	13 days
Average rise/decline for patterns with throwbacks/pullbacks	33%	–16%
Average rise/decline for patterns without throwbacks/pullbacks	47%	–26%
Percentage price resumes trend	66%	46%
Performance with breakout day gap	51%	–20%
Performance without breakout day gap	37%	–19%
Average gap size	$0.37	$0.53

Table 23.5 shows statistics related to size.

Height. Tall diamonds perform better than short ones. To use this result, compute the diamond height by subtracting the lowest low in the diamond from the highest high and then dividing by the breakout price (the point where price closes outside the diamond trendline boundary). If the result is larger than the median listed in the table, then you have a tall pattern.

Width. Wide diamonds perform better than narrow ones but only after an upward breakout. Downward breakouts show no preference. I used the median length as the separator between narrow and wide.

Height and width combinations. For upward breakouts, tall diamonds outperform and wide ones also outperform. You'd think it obvious that diamonds both tall and wide would perform best.

However, tall and narrows ones actually do best for both up and down breakouts. You'll want to avoid trading short diamonds (either wide or narrow). They perform worst.

Table 23.6 shows volume-related statistics.

Volume trend. Diamonds having a falling volume trend most often. Do not discard a diamond because volume trends upward.

Rising/Falling volume. Upward breakouts with a falling volume trend show a two-percentage-point performance advantage compared to those diamonds with a rising volume trend. Downward breakouts favor a rising trend for better performance, but the difference is small.

Table 23.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	48%	–22%
Short pattern performance	31%	–16%
Median height as a percentage of breakout price	10.9%	12.1%
Narrow pattern performance	38%	–19%
Wide pattern performance	41%	–19%
Median width	34 days	37 days
Short and narrow performance	28%	–17%
Short and wide performance	37%	–15%
Tall and wide performance	42%	–21%
Tall and narrow performance	58%	–24%

Table 23.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	70% down	67% down
Rising volume trend performance	38%	–20%
Falling volume trend performance	40%	–19%
Heavy breakout volume performance	41%	–19%
Light breakout volume performance	38%	–20%

Breakout day volume. Results are mixed with upward breakouts showing better post-breakout performance if breakout day volume is above average and downward breakouts seeing better performance after a breakout on light volume.

Table 23.7 relates to how often price reaches a stop location, but due to the way I calculate the location, it doesn't apply to diamonds, so it isn't provided here.

Table 23.8 shows the performance over three decades.

Performance over time. Diamond performance has deteriorated since the 1990s, as the table shows. That's shown in the column of upward breakouts. Downward breakouts don't fare much better, though, with the last two decades having similar performance, but both are well below the 1990s level.

Table 23.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	45%	–23%
2000s	39%	–14%
2010s	35%	–15%
Performance (above), Failures (below)		
1990s	5%	11%
2000s	8%	19%
2010s	26%	19%

Table 23.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	77 or 22%	44 or 35%
Single bust count	36 or 47%	30 or 68%
Double bust count	23 or 30%	2 or 5%
Triple+ bust count	18 or 23%	12 or 27%
Performance for all busted patterns	–12%	34%
Single busted performance	–19%	48%
Non-busted performance	–19%	39%

Failures over time. This shows how many patterns fail to see price move more than 5% after the breakout. The sample counts are few, totaling 46 for upward breakouts and just 19 for downward ones. I'd ignore the results, especially the 26% failure rate (bull market, 2010s). All three decades have samples counts ranging from 110 to 121 (up breakouts only), so it's not a low-sample-count problem. The numbers might be correct.

Table 23.9 show busted pattern performance.

Busted patterns count. Diamonds bust frequently, but not as often as other chart pattern types.

Busted occurrence. Sorting the busted patterns into single, double, and more than two busts (triple+) shows that single busted patterns happen most often. Which one comes in second depends on the column you're looking at. It's typical for triple+ to place second in frequency (downward breakouts show this).

Busted and non-busted performance. If you're lucky enough to trade a single busted pattern, you can do as well or better than non-busted diamonds. Of course, you have to trade it perfectly and often to match the rates shown in the table. Good luck with that, but the 48% gain after a downward breakout makes me want to wait for a diamond with a busted downward breakout to come along. Maybe I can hitch a ride.

Trading Tactics

Table 23.10 shows trading tactics.

Measure rule, targets. The Results Snapshot ("Percentage meeting price target") at the beginning of this chapter shows how often the measure rule works using the full pattern's height.

For an example, refer to Figure 23.7. In both diamonds, compute the height by subtracting the lowest price in the pattern (point B) from the highest high (point A) then adding to (upward breakouts) or subtracting from (downward breakouts) the breakout price (point C). The breakout occurs the day price closes outside the diamond boundary.

Specifically, the diamond top (left diamond) shows a height of 7.62. That is, 79.25 – 71.63, or the high minus the low. Since the breakout is downward, subtract the result from the breakout price. That gives a target of 65.88 or 73.50 – 7.62 (the breakout price minus the height). For downward breakouts, ignore targets below zero.

The bottom portion of the table shows how often various heights work with the measure rule. For example, using half the diamond's height means price will likely reach the target more than 80% of the time. That's very good. Using tall heights (2×, 3×) in the projection means the measure rule target will be harder to hit, but if price does reach it, the profit will be better.

Table 23.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the diamond height from the highest high to the lowest low and then add the result to the breakout price if the breakout is upward; subtract the height from the breakout price for downward breakouts. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Quick rise/fall	Price often returns to the launch price following a quick rise or fall preceding the diamond.
Wait for breakout	The diamond can break out in any direction, so wait for the breakout.
Busted trade	See Table 23.9

Description	Up Breakout	Down Breakout
Percentage reaching half height target	88%	82%
Percentage reaching full height target	73%	55%
Percentage reaching 2× height	50%	23%
Percentage reaching 3× height	34%	12%

Once you have a target, you can use the diamond's height to see if the target is reasonable. Let's use the left diamond's numbers. Divide the diamond's height (7.62) by the breakout price (73.50) to get a potential 10% drop. Table 23.3 shows that 37% of diamond bottoms with downward breakouts in bull market will fail to see price drop more than 10%. Flipping that around, it also means that 63% of the time, the stock will reach a target 10% below the current price. That's not terrific, but it's not awful, either.

Quick rise/fall. Figure 23.7 also shows an alternative way of determining the magnitude of the rise or decline. When price shoots upward leading to the start of the diamond (in the case of the left

diamond), a quick decline often follows, which can take price back to the launch point (often stopping just above it). I show this as the "Expected Decline" in the figure.

The diamond bottom (right diamond) shows a similar situation. Price makes a steep drop into the pattern and soars back out in a similar trend. The stock stops climbing near the launch point (shown as the "Expected Rise").

Wait for breakout. Before you invest in a stock showing a chart pattern, wait for the breakout. Since diamonds can break out either up or down, you cannot predict the breakout direction with certainty. Thus, wait for the breakout—a close outside the pattern boundary—before taking a position. Yes, premature breakouts do occur, but they are rare. A premature breakout happens when price closes outside the diamond boundary but returns in a day or two. In the 288 diamonds I looked at, I found fewer than a dozen with premature breakouts.

Busted trade. Downward breakouts that single bust show good gains. See Table 23.9 for more information.

Table 23.11 shows a table for diagonal diamonds. The name comes from an article in *Technical Analysis of Stocks & Commodities* magazine, November 2018, by Igor R. Toshchakov. **Figure 23.6** shows a simplified drawing of his examples. Let's discuss the patterns before I talk numbers.

Look at AB, a diamond pattern he calls a single diagonal, where the top and bottom are connected by the longest trend in the pattern. It's a diamond pattern (yes, I could have drawn it better, so pretend it's a good-looking diamond), but the bottom (B) appears before the top (A). He says that this combination indicates the breakout will be downward.

Pattern CD is another single-diagonal diamond except the top (C) comes before the bottom (D). The predicted breakout direction from this pattern is upward.

The right portion of the figure shows two-diagonal diamond shapes. Instead of one long trend connecting the top and bottom of the pattern, we see two equal or nearly equal lengths connecting the top and bottom. Two diagonals tend to be a bit squatter looking on the side with two touches (FG and IJ), so there's a bit of a difference

between single- and two-diagonal shapes, making it easier to determine which is which.

Table 23.11 Diagonal Diamonds

Description	Identification
Single diagonal, bottom before top	Bottom forms before the top. The longest trend connects the top and bottom. Pattern looks like a diamond pushed to the right. The breakout is supposed to be downward but is actually upward most often.
Single diagonal, bottom after top	Bottom forms after the top. The longest trend in the diamond connects the top and bottom. Pattern looks like it's been pushed to the left. This configuration correctly predicts an upward breakout but not all of the time.
Two diagonal	Looks like a head-and-shoulders, top or bottom. Two lines of nearly equal length connect the top and bottom. If the bottom trendline touch comes after the top touch, the breakout direction is likely to be upward.

	Correct?	Benchmark
Single diagonal, bottom before top, down breakout	28%	26%
Single diagonal, bottom after top, up breakout	81%	74%
Two-diagonal, bottom before top, down breakout	26%	26%
Two-diagonal, bottom after top, up breakout	76%	74%

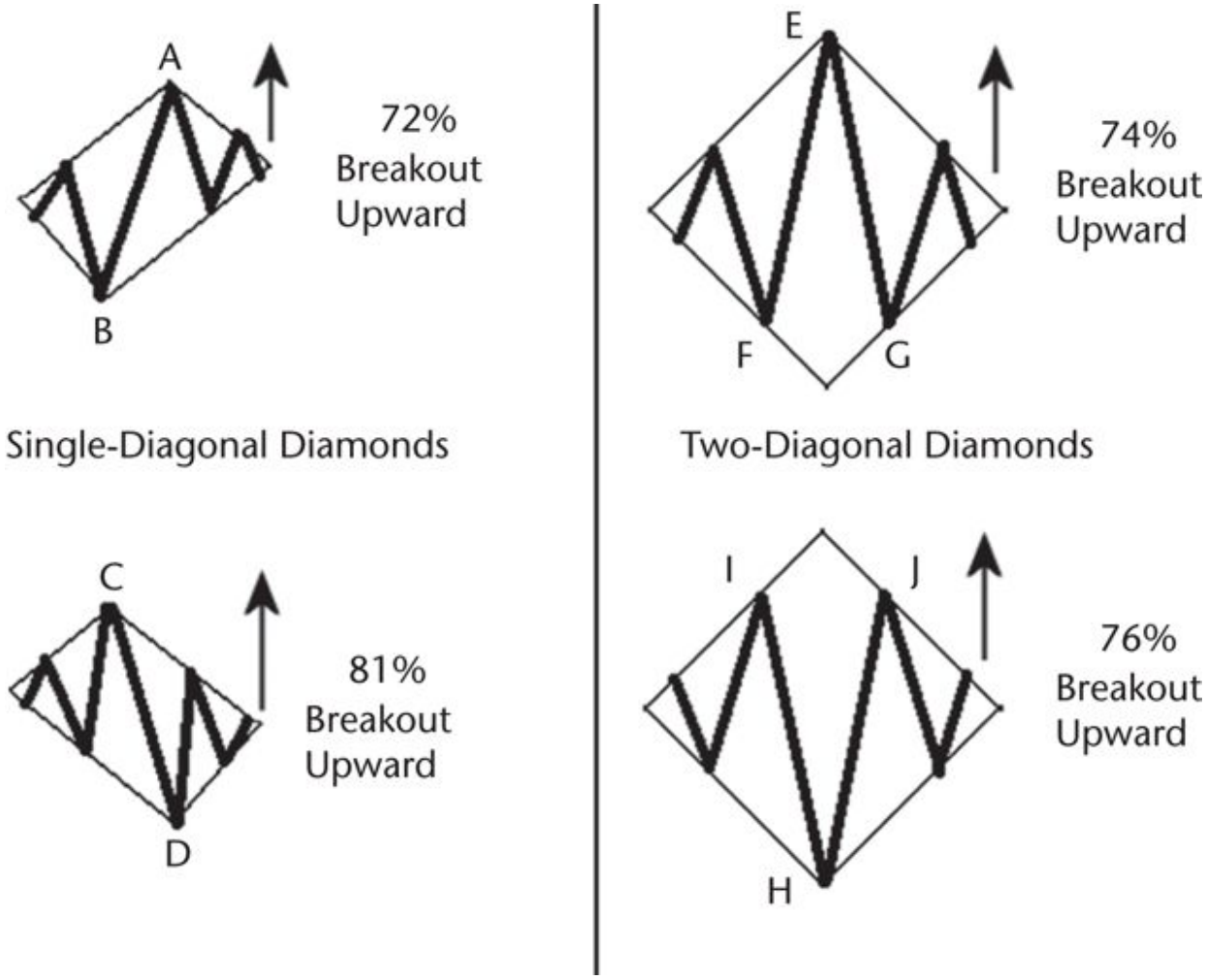


Figure 23.6 Shown are four combinations of single- and two-diagonal configurations for diamonds.

In the top-right panel, trends EF and EG form the two longest segments. Notice how the lines do *not* connect to the bottom of the diamond (instead, price touches the sides and they straddle the bottom).

The bottom-right panel shows the pattern flipped upside-down. Trends HI and HJ connect the top and bottom. Again, they straddle the diamond's top peak where the trendlines join. Toshchakov says that with two-diagonal shapes, the breakout can be in either direction.

Single diagonal. I used 246 diamond bottoms found from May 1996 to April 2020. I went through each pattern and marked whether it was a single- or two-diagonal pattern and logged when the top and

bottoms of the pattern appeared. Table 23.11 shows the results in the lower portion of the table.

If you ignore whether the pattern is a single- or two-diagonal configuration, a downward breakout will happen 26% of the time and an upward breakout will happen 74% of the time. That's the benchmark for the breakout direction (from Table 23.4), which is what I want to test.

I sorted the diamonds into single- and two-diagonal shapes and sorted by whether the top or the bottom of the pattern came first. The configuration shown at AB in the figure, where it's a single diagonal with the bottom coming before the top, is supposed to break out downward. I found that worked only 28% of the time. That's better than the benchmark's 26%, but it's well short of the 72% that break out upward. In other words, it's more correct to say the pattern breaks out upward most often.

Configuration CD shows a single diagonal with the bottom coming after the top. His technique says these types of diamonds break out upward. Indeed they do 81% of the time compared to the benchmark's 74% of the time. That's a handy improvement.

Two-diagonal. For two-diagonal patterns, I checked whether the top or bottom came first and checked the breakout direction. The *benchmark* rate doesn't change with 26% of diamonds breaking out downward and the other 74% breaking out upward.

For two-diagonal patterns, when the bottom (F) happened before the top (E in pattern EFG), I found they break out downward 26% of the time. That ties the benchmark, but far from the 74% that break out upward.

The two-diagonal, bottom (H) after the top pattern (I in HIJ pattern), correctly predicts an upward breakout 76% of the time. That's slightly better than the 74% benchmark. Of course, Toshchakov doesn't claim that the two-diagonal has a defined breakout pattern, but I checked anyway. Figures 23.1 and 23.2 show two-diagonal patterns, and both have upward breakouts. Figure 23.4 shows a two-diagonal diamond with a downward breakout.

How do you apply this to your trading? *When the bottom comes after the top, expect an upward breakout*. Two configurations meet that

test: the single diagonal, top before bottom, shown as CD in Figure 23.6, and the two-diagonal pattern HIJ. Expect an upward breakout 76% to 81% of the time on average, depending on whether it's a single- or two-diagonal pattern.

Figure 23.5 shows a single-diagonal pattern with the bottom coming before the top. The breakout is supposed to be downward, but it's not. Figure 23.7 shows two single-diagonal patterns with the top coming before the bottom. The left one breaks out downward (the prediction fails), but the other diamond on the right shows a correct, upward breakout.

Sample Trade

Scott graduated from engineering college and took his first professional job at a growing software company. The job pays well, but he has many school loans and a mountain of dept. He thought of using his paycheck to keep ahead of the bills while depending on the bull market to furnish the luxuries.

He had his eye on a new stereo system and wanted it for a party he was hosting during the Fourth of July festivities. That did not leave him much time, so he searched for a chart pattern he could trade profitably. He chose the diamond bottom shown in **Figure 23.7** (the diamond on the right). Scott first noticed the diamond in May, a few days before the breakout. He believed that the price would not decline below 69.88, or 12 cents below the round number of 70, and at the same level as a couple of price peaks in January.

Risking just $0.75 with a possible reward of $3.75 (the pattern's height) gave him a risk-to-reward ratio of 5:1 (5 is the reward for every dollar risked).

“If everything worked as planned, I would make enough to buy the stereo.”

The day after the stock broke out upward, he bought and received a fill at 71.75 (near point C). “Entry was higher than I liked, but with the strength shown, I was sure the trade would work out. I placed a stop at 69.88 with my broker.”

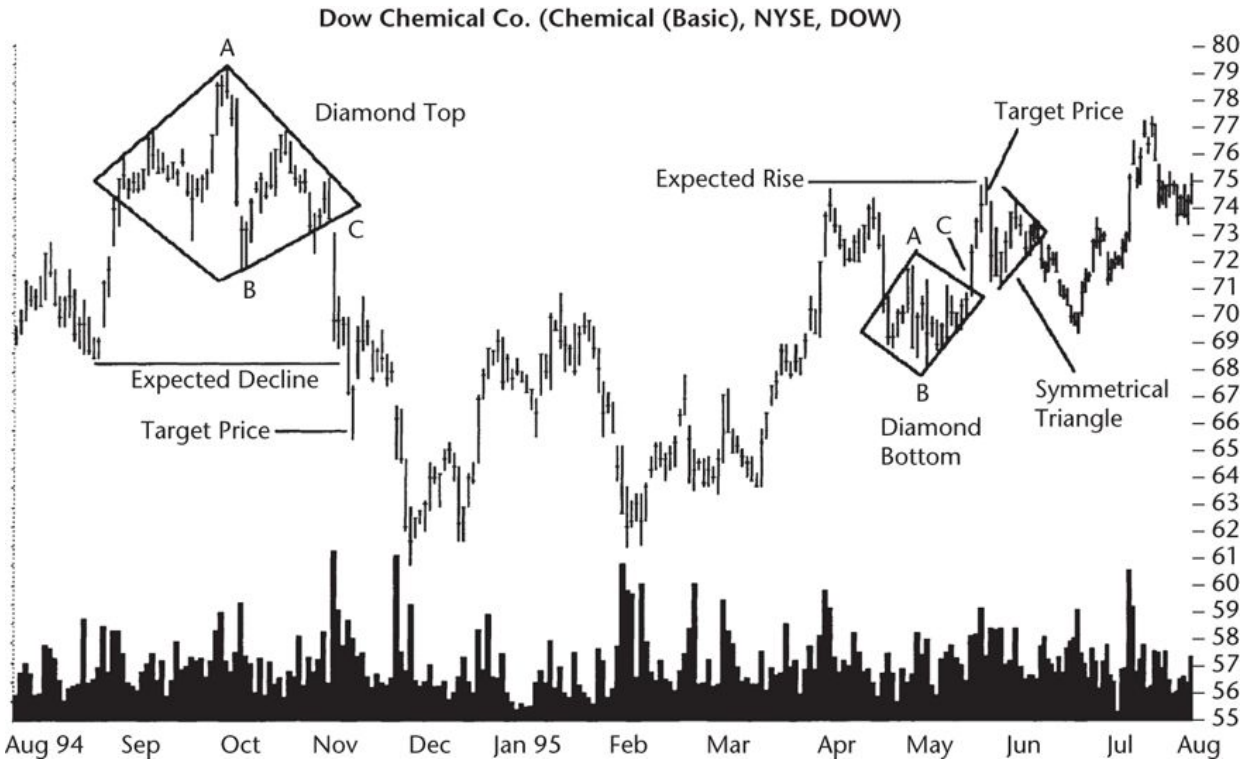


Figure 23.7 A diamond top (left) and a diamond bottom (right), both single-diagonal diamonds.

Three days later the stock closed at 75, above the target price. He dropped by the music store just to fondle knobs and flip switches of his dream machine.

Then things began going wrong. The stock closed down nearly $3 to 72.13. It dropped to 71.38 the next day and made a lower low a day later. Suddenly, Scott was losing money, and his dream stereo was in danger of remaining on the store shelf. Should he sell the stock and put off the party for another time?

Luck was on his side and price began climbing again. Soon, it reached 74, but the honeymoon didn't last long. Price completed a symmetrical triangle but, “I didn't see it.”

The stock broke out downward from the triangle. The stock even gave him another chance to get out at a profit when it attempted a pullback to the triangle boundary. “I was busy making party favors, and missed that signal, too. Am I an idiot or what?”

When he received a call from his broker in mid-June reporting that the stop took him out at 69.88, Scott scratched his head and

wondered what went wrong.

He asked me. “One word: Greed. Since you needed money for the stereo, once price cleared the top of the diamond, you should have put a limit order to sell at your target.” Although this technique limits the profit potential (because you get taken out even though the stock may double after that), it allows a trader to capture the turn near an expected high.

24
Diamond Tops

RESULTS SNAPSHOT

Appearance: After an upward price trend, a diamond pattern forms.

Upward Breakouts

Reversal or continuation	Intermediate-term bullish continuation
Performance rank	39 (last) out of 39
Breakeven failure rate	21%
Average rise	29%
Volume trend	Downward
Throwbacks	57%
Percentage meeting price target	65%
See also	Diamond bottoms

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	3 out of 36
Breakeven failure rate	15%
Average drop	17%
Volume trend	Downward
Pullbacks	58%
Percentage meeting price target	63%

The Results Snapshot shows the important results for diamond tops. In appearance, the only difference between diamond top and bottom patterns is the price trend leading to the diamond. For diamond tops, the price trend is upward leading to the pattern. Diamond bottoms have price trending downward into them.

A review of the numbers shows that upward breakouts rank last for performance. The average rise, at 29%, is well below the 42.4% gain showed by the average chart pattern. The failure rate is high, too, ranking 33 out of 39. That's not dead last, but the patient might need a respirator.

Diamonds with downward breakouts do well as far as the average decline goes. They rank third. It's as if diamond tops are bearish patterns and an upward breakout suffers while a downward breakout thrives.

Tour

What does a diamond top look like? **Figure 24.1** shows a good example. This diamond signals a reversal of the prevailing upward price trend and shows the preferred behavior of a top: Price returns to the level before the diamond began (the launch price).

The reversal stands out and makes the diamond easier to find (because it's at the end of a swift uptrend). Of course, not all diamond tops act this way. Some signal a reversal of the prevailing trend and price not only retraces recent gains but continues moving down, too.

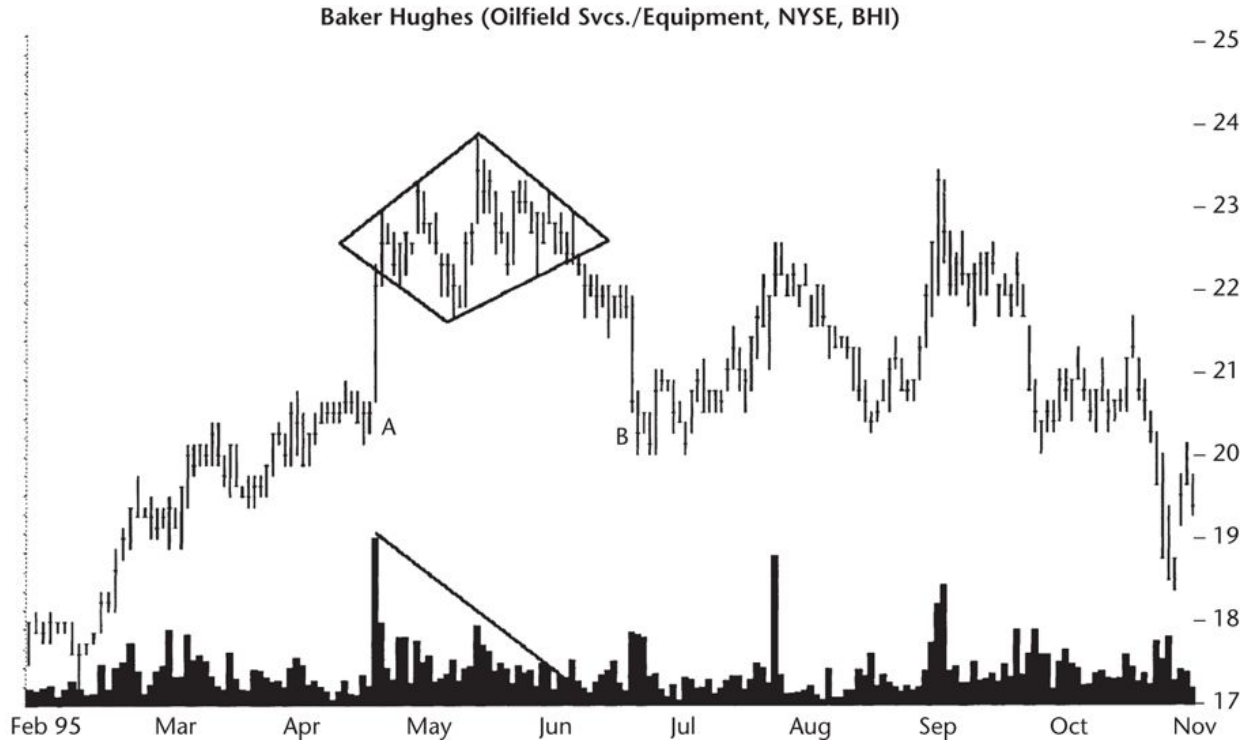


Figure 24.1 A good example of a diamond top. Notice that price quickly returned to the $20 level.

I want to emphasize the return to the launch price in this figure. Notice the strong upward move at A. Price zips skyward on high volume. After the diamond top completes, the stock drops. Often the drop isn't as fast as the rise. Indeed, price may move sideways for a time. In some cases, certainly not all and I don't have a good number for you as an estimate of how often this occurs, price returns to stop just above the launch price. By that, I mean point B will bottom just above the price of point A.

In this case, that doesn't happen. Price meets A at B and the drop from the diamond to B doesn't take long, either. In many cases, you may see price move up strongly at A, but a downward breakout won't return price to A or even slightly above it. The stock just doesn't make it back down. However, this idea of returning to the launch price makes for setting a price target easier. It won't always work, but you have an idea of how far price might drop.

Identification Guidelines

Table 24.1 lists identification guidelines for diamond tops. Consider the diamond top pictured in Figure 24.2. A broadening top looks like a mouth opening at G, inhaling price. The diamond appears at D, so let's talk about it.

Appearance. The fluctuations of peaks and valleys form the diamond shape when trendlines connect them such as that shown in the figure. Notice that the diamond is not symmetrical; irregular diamond shapes are common for this pattern. Even so, they *do* look like diamonds.

Price trend. The short-term price trend from A to B is upward leading to the start of the pattern. We see a bit of overshoot at B and undershoot at C before the diamond builds. Ignore the overshoot and undershoot when assessing whether a diamond is a top or bottom.

Volume. The volume trend is receding in this diamond, according to linear regression. All I see is a big volume spike in the middle of the pattern. It's like a middle finger pointing at the diamond. Breakout day (E) volume at H is high but not even close to what it was in the middle of the diamond. Price throws back to the breakout price, F, before resuming its upward move.

Support and resistance. Support and resistance for diamond tops commonly appear at the top of the pattern, as seen in Figure 24.3. The diamond reversal forms a resistance level, repelling price during the rise in March and April 1993, and is not pierced until a year later.

A congestion zone forms in October 1993 and lasts through March of the following year before price climbs convincingly above the resistance area. Even then, during April and May 1994, price is buoyed by the support zone at 31 created a year and a half earlier.

Table 24.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price forms higher highs and lower lows (widening appearance), then lower highs and higher lows (narrowing appearance). Trendlines connecting the minor highs and lows resemble a diamond. The diamond need not appear symmetrical and can be tilted to one side.
Price trend	Price trends up to the diamond top. With this definition, diamond tops need not form at the top of a price chart—they can form anywhere. Ignore any overshoot or undershoot a week or two before the pattern starts.
Volume	Diminishing over the length of the formation. Breakout volume is usually high, and it can continue high for several days. Do not discard a pattern because it shows an unusual volume trend or unusual breakout day volume.
Support and resistance	The diamond creates a location for support or resistance. Diamond tops usually show support/resistance near their top, which can last up to a year or more.
Breakout direction	Price can break out in any direction, but slightly favors a downward breakout.

Figure 24.2 This diamond top appeared when price was moving sideways.

Figure 24.4 shows another example of a diamond top. I would expect price to break out downward because of the quick rise leading to the pattern (late January) and drop until they found support around the 108 level, the price range of the January lows. As you can see, that did not happen. Price broke out upward instead.

Figure 24.3 Support and resistance for the diamond appears at the top of the pattern. A support and resistance zone at 31 created by the diamond lasts for a year and a half. Note the weekly time scale.

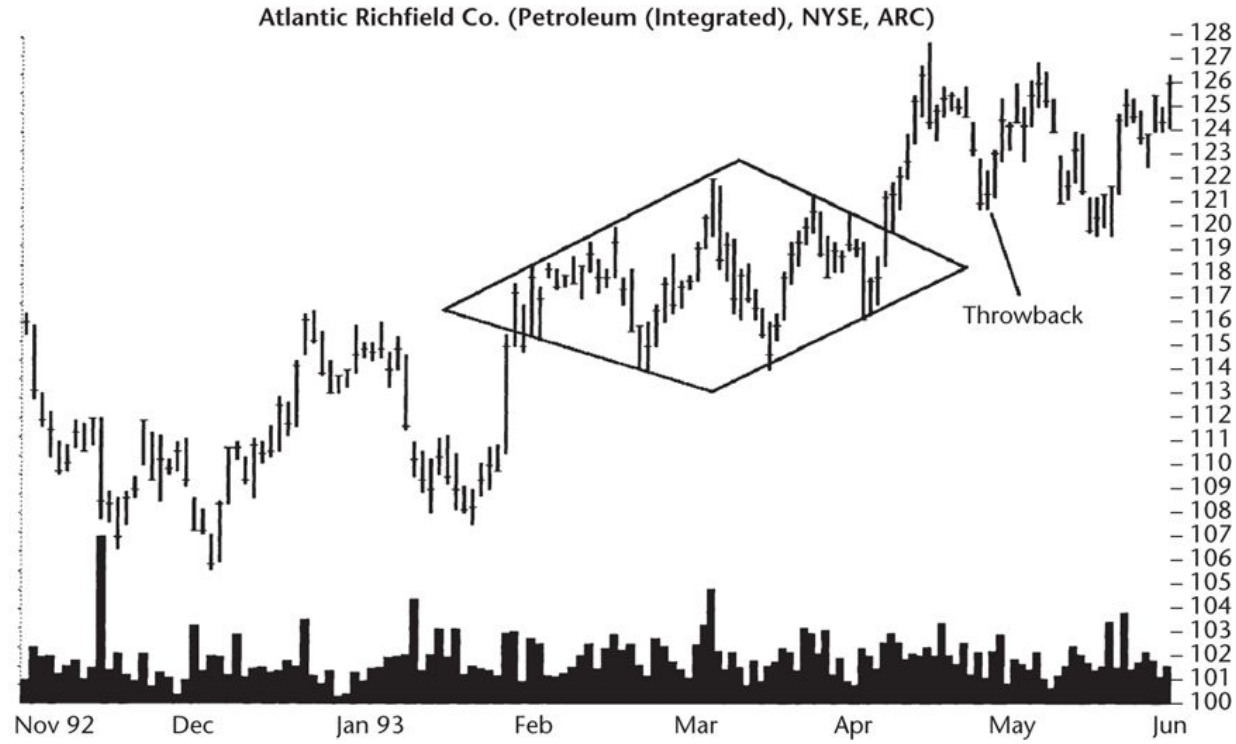


Figure 24.4 This diamond top sees price continue higher.

Does this diamond obey the identification guidelines? Price rises into the pattern from the bottom, so the upward price trend is correct for a top. The diamond shape becomes clear after drawing trendlines along the minor highs and lows. Linear regression on the volume trend shows that it tilts downward, as expected (take my word for it). Breakout day volume is high, but again, this is not a rule, just an observation. A breakout on low volume is fine.

In short, the diamond top pictured in Figure 24.4 is valid. With an upward breakout, I would check for overhead resistance to the upward move, but this figure does not show any. A look at the weekly chart would clarify the situation and allow a trader to estimate the likely rise (assuming price stops at overhead resistance).

Breakout direction. Price breaks out in a direction that's almost random, but it favors a downward direction.

Focus on Failures

Figure 24.5 shows a diamond top failure. The diamond may look odd by its unsymmetrical appearance, but does it qualify as a valid diamond? Yes. The price trend leading to the pattern is up, there are plenty of trendline touches in the pattern, and volume diminishes from being high on the left to low on the right—all are ingredients of a properly selected diamond top. Breakout volume, however, is timid, falling well short of the peaks posted during the prior three days.

Price breaks out downward from the diamond and reaches the ultimate low as shown on the chart. After that, a pullback sees price recover to the breakout price and keeps climbing in a swift move upward, peaking in early February. The price drops, gapping lower (breakaway gap).

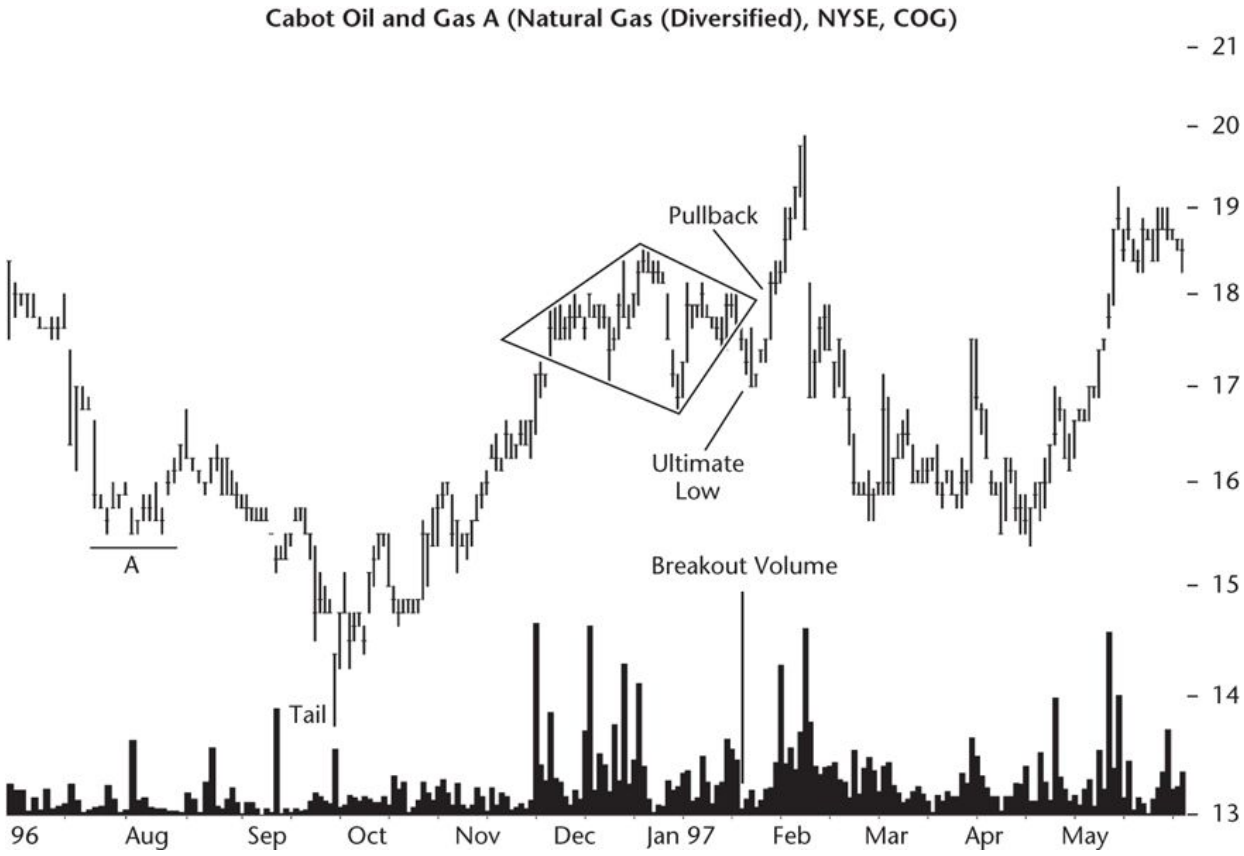


Figure 24.5 A valid diamond top breaks out downward, but price fails to descend far because of underlying support.

Is low breakout volume the reason why price failed to descend far (just 3%)? Maybe. A high volume breakout would have given more

confidence to a bearish situation and perhaps prevented a pullback. I have noticed that high-volume downward breakouts pull back less often than do low-volume ones. This makes intuitive sense, as a high-volume descent tends to push price down farther than a low-volume one.

Perhaps the key to this failure is like many others: Support below the pattern stops the decline. On the weekly chart (not shown), support appears in February and August 1996, and May 1995, all with price peaking near 17. Coupled with a bullish general market, the rising tide lifted all boats and prevented this one from sinking.

Based on this chart, if this were my trade, I would have seen the support in July (point A) as a warning sign. That would be my guess as to how far price would drop. Indeed, price does stop at that level in April, but that is well after the pattern fails.

If price pierced the point A support zone at 15.50, I would expect a continued decline to the September low. To play it safe, perhaps a target of 14.50 (above the September tail because you do not want to place a target based on an outlier spike) would work.

A stop would have closed out my short position at the prior minor high (near the price level where the word “Pullback” points in the figure).

Why do chart patterns fail? Who knows? They just do. Use stops to protect your position and use conservative price targets.

Statistics

Table 24.2 shows general statistics for diamond tops.

Number found. I scoured my three databases to unearth enough diamonds to make the statistics tables worthwhile. I found the first pattern in August 1991 and the most recent in November 2019. I found 896 diamond tops in 539 stocks, but not all stocks covered the entire period and some no longer trade. Bear market samples were too few to include in this chapter.

Reversal (R), continuation (C) occurrence. Because we know price trends upward into the pattern, an upward breakout means the pattern acts as a continuation. Those with downward breakouts act as reversals.

Average rise or decline. As I mentioned previously, the meager rise falls well short of what we see in other chart patterns. However, downward breakouts do well for a bearish breakout.

Standard & Poor's 500 change. The numbers suggest how well you could have done if you bought the stocks in the index as opposed to trading the diamonds perfectly. The numbers also show the influence of the general market on the average rise or decline. A large up move (bull market) helped price rise while a downward move (bear market) pulled the stock lower.

Table 24.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	340	393
Reversal (R), continuation (C) occurrence	100% C	100% R
Average rise or decline	29%	–17%
Standard & Poor's 500 change	8%	–3%
Days to ultimate high or low	153	50
How many change trend?	48%	33%

Days to ultimate high or low. I checked my speedometer and found that the drop after a downward breakout from a diamond is

nearly twice as fast as the rise (upward breakout). So if you've ever wondered why you lose so much so quickly when price drops, now you know.

How many change trend? I consider values for upward breakouts above 50% to be good, but diamond tops fall short of that goal. Just 48% see price climb more than 20% after the breakout. Downward breakouts, however, exceed the 28% average for most other chart pattern types by a handy amount.

Table 24.3 shows failure rates for diamond tops under varying breakout directions.

How do you make sense of the numbers? The table shows how likely it is that your pattern may fail to rise or drop a given amount. For example, in bull markets, 21% of the diamonds with upward breakouts failed to see price rise more than 5%. Thirty-seven percent failed to see price climb more than 10%. Similarly, 15% of the patterns in bull markets with a downward breakout failed to see price drop more than 5%.

For small moves (up to 15%), diamonds with downward breakouts are the best bets. They have the lowest failure rates. This changes for moves 15% and higher. For large moves, patterns in bull markets with upward breakouts show smaller failure rates.

Table 24.4 shows breakout-related statistics.

Breakout direction. Downward breakouts occur most often, but the direction is almost random.

Yearly position, performance. Mapping performance onto the yearly price range, we find price within a third of the yearly low as having the best performance. The other two thirds don't show much performance difference between themselves.

Throwbacks and pullbacks. How often does price throw back (upward breakouts) or pull back (downward breakouts) to the diamond trendline border or breakout price? Answer: about half the time.

Table 24.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	71 or 21%	59 or 15%
10	55 or 37%	80 or 35%
15	29 or 46%	62 or 51%
20	23 or 52%	61 or 67%
25	35 or 63%	42 or 77%
30	20 or 69%	29 or 85%
35	18 or 74%	18 or 89%
50	32 or 83%	35 or 98%
75	27 or 91%	7 or 100%
Over 75	30 or 100%	0 or 100%

Table 24.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	46% up	54% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 35%, M 28%, H 29%	L –20%, M –17%, H –17%
Throwbacks/pullbacks occurrence	57%	58%
Average time to throwback/pullback peaks	5% in 4 days	–6% in 5 days
Average time to throwback/pullback ends	10 days	13 days
Average rise/decline for patterns with throwbacks/pullbacks	21%	–14%
Average rise/decline for patterns without throwbacks/pullbacks	39%	–21%
Percentage price resumes trend	58%	48%
Performance with breakout day gap	25%	–15%
Performance without breakout day gap	30%	–18%
Average gap size	$0.56	$0.29

The time to complete the throwback or pullback ranges between 10 and 13 days. When a throwback or pullback occurs, performance suffers, as the table shows. Thus, the key to selecting better performing patterns is to search for underlying support or overhead resistance before trading. Nearby support or resistance may repel the downward or upward move, respectively.

Gaps. Across the board, gaps hurt performance. By gaps, I mean a price gap that occurs on the day price closes outside the pattern boundary (the breakout day). I'm not sure why this is because gaps are supposed to help performance, not hinder it.

Table 24.5 shows pattern size statistics.

Height. I consider height to be one of the best predictors of future performance. Tall diamonds perform better than short ones. To

determine if the pattern is short or tall, measure the diamond height from the highest high to the lowest low in the pattern and then divide by the breakout price (where price pierces the diamond boundary). If the result is larger than the median shown in the table, then you have a tall pattern; less than the median and the pattern is short.

Width. Wide patterns perform better than narrow ones. I used the median width as the separator between narrow and wide.

Height and width combinations. Diamond tops both tall and wide either tie or outperform the other combinations. For upward breakouts, avoid those patterns that are short and narrow. Downward breakouts suffer when the pattern is short and wide.

Table 24.6 shows volume-related statistics.

Volume trend. Volume trends downward, but the results are almost random. I used linear regression on volume to determine the trend, so no guessing was involved.

Rising/Falling volume. There's no consistent trend for rising and falling volume. Upward breakouts do better if volume is rising throughout the pattern. Downward breakouts show the reverse, with falling volume showing a slight post-breakout performance advantage.

Table 24.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	33%	–21%
Short pattern performance	25%	–13%
Median height as a percentage of breakout price	9.8%	9.9%
Narrow pattern performance	26%	–16%
Wide pattern performance	32%	–18%
Median width	38 days	36 days
Short and narrow performance	24%	–14%
Short and wide performance	27%	–12%
Tall and wide performance	34%	–21%
Tall and narrow performance	30%	–21%

Table 24.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	55% down	59% down
Rising volume trend performance	32%	–16%
Falling volume trend performance	26%	–18%
Heavy breakout volume performance	30%	–17%
Light breakout volume performance	27%	–18%

Breakout day volume. Upward breakouts do best if volume is above the 30-day average. Downward breakouts show the reverse, with light breakout day volume showing price having a larger decline.

The inability of upward and downward breakouts to agree for both rising/falling and heavy/light volume suggests the findings are unreliable. As a trader, I don't put much stock in volume. In fact, I

prefer to look at charts without volume showing. I have seen that rising volume on the way to the ultimate high seems to help performance, but I haven't found a way to predict that kind of a volume trend.

Table 24.7, how often stops hit, is missing. My computer can't correctly place stops for this pattern, so I don't show the table.

Table 24.8 shows the performance over three decades.

Performance over time. Downward breakouts show good performance back in the 1990s, but performance has steadily declined since. Upward breakouts did best in the 2000s with the other two decades performing close to one another (within two percentage points).

Failures over time. Downward breakouts show steadily increasing failure rates, where the numbers represent how often a diamond top fails to see price move more than 5% after the breakout.

Upward breakouts don't show the same trend. Rather, the 2010s have the highest failures and the 2000s showed the fewest.

Table 24.9 shows busted pattern performance.

Busted patterns count. A third of diamond tops will bust. That means price moves no more than 10% after the breakout before it reverses and sails across the pattern to break out in the new direction.

Busted occurrence. Single busts happen most often, but you'll have to consult the table for whether double or more than two (triple+) busts come in second. I like to see single busted counts higher, like 70% or more. That way, if I want to trade a busted pattern, I can assume it'll single bust and give me the best performance. Because single busts are below 70%, I'd avoid trading a busted pattern unless you were sure it would single bust. Why the emphasis on single busted patterns?

Busted and non-busted performance. The answer is because single busted patterns perform best. They beat the three combinations (singe, double, and triple+, combined) and non-busted patterns. In fact, patterns busting a downward breakout perform twice as well as their non-busted counterparts. Isn't that a trip?

Table 24.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	24%	–20%
2000s	37%	–15%
2010s	26%	–14%
Performance (above), Failures (below)		
1990s	20%	7%
2000s	12%	18%
2010s	28%	24%

Table 24.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	114 or 34%	130 or 33%
Single bust count	54 or 47%	77 or 59%
Double bust count	48 or 42%	8 or 6%
Triple+ bust count	12 or 11%	45 or 35%
Performance for all busted patterns	–13%	36%
Single busted performance	–22%	58%
Non-busted performance	–17%	29%

Trading Tactics

Table 24.10 shows trading tactics.

Measure rule, targets. Use the measure rule to predict a price target. Consider Figure 24.7, a chart of a diamond top. Compute the formation height by taking the difference between the high in the pattern (point A at 43.85 in this example) and the low (B at 38.08). Add the difference (5.77) to the breakout price (C at 41.85, the point at which price pierces the diamond boundary) to get the target (47.62). In this example, price didn't reach the target.

The lower portion of the table shows how often the measure rule works using various heights in the computation. For example, using the full height (like we did in the example) shows price reaching the target between 63% and 65% of the time, depending on the breakout direction. Cut the height in half, use it in the formula, and the success rate increases. Double or triple the height and the success rate tumbles.

Table 24.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the lowest low from the highest high in the diamond. For downward breakouts, subtract the height from the breakout price. For upward breakouts, add the difference to the breakout price. The result is the price target. Alternatively, the stock can return to the launch price from which it began. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	For best results, wait for price to close outside the diamond trendline border before placing a trade.
Risk/reward	Look for support (risk) and resistance (reward) zones before placing a trade. Those zones are where the trend is likely to pause or even stop. From the current closing price (before the breakout), compute the difference between the zones and the current price. The ratio of the two must be compelling enough to risk a trade.
Busted patterns	See Table 24.9 for help trading a busted downward breakout.

Description	Up Breakout	Down Breakout
Percentage reaching half height target	83%	86%
Percentage reaching full height target	65%	63%
Percentage reaching 2× height	40%	30%
Percentage reaching 3× height	29%	16%

After you compute the height, divide it by the current price and compare it to the results in Table 24.3. In the above example, the height is 5.77, and let's assume the breakout price is the current price, 41.85, for a potential rise of 14%. How likely is that?

Table 24.3 says that in bull markets, almost half (46%) of patterns will fail to rise more than 15% (which is closest to the potential rise of 14%). That also means 54% will exceed a 15% rise. So the probabilities could be a lot stronger for this trade.

However, there is an alternative method that sometimes yields more accurate results. The method involves looking at the price chart and seeing if there is something to reverse. By this I mean diamonds sometimes form after a quick run-up (or down) in price. The reversal could erase the gains and return price to where they were before the run-up. Figure 24.1 shows an example of where it worked (price at B returned to the price of A).

Wait for breakout. When trading technical patterns like diamond tops, it is always safest to wait for the breakout. If you do not wait for the breakout, you may face a situation similar to that shown in Figure 24.4. Instead of price retracing the quick rise from the January low, price resumed trending higher. A trader shorting the stock before the breakout would likely take a loss.

Risk/reward. Before placing a trade, consider the risk/reward ratio. In essence, you first identify the support and resistance levels and calculate the difference between those levels and the current price. Trades that result in risk/reward ratios of one to two or higher are worth making. With smaller ratios, the risk may be too high to warrant a trade.

I'll confess that I'm holding my nose as I'm typing this (which isn't easy, by the way). In my trading, I don't care about the risk/reward ratio. Why? Because I let profits run, easily beating a lousy risk/reward ratio in a trade others might discard.

Busted pattern. Consult Table 24.9 for guidance on trading busted patterns. Downward breakouts provide the best performance advantage. After the stock busts a downward breakout, and closes above the top of the diamond, buy.

Table 24.11 shows a table for diagonal diamonds. The name comes from an article in *Technical Analysis of Stocks & Commodities* magazine, November 2018, by Igor R. Toshchakov. **Figure 24.6** shows a simplified drawing of his examples. Let's discuss the patterns before I talk numbers.

Look at AB, a diamond pattern he calls a single diagonal, where the top and bottom are connected by the longest trend in the pattern. It's a diamond pattern (yes, I could have drawn it better, so pretend it's a good-looking diamond), but the bottom (B) appears before the top (A). He says that this combination indicates the breakout will be downward.

Pattern CD is another single-diagonal diamond except the top (C) comes before the bottom (D). The predicted breakout direction from this pattern is upward.

The right portion of the figure shows two-diagonal diamond shapes. Instead of one trend connecting the top and bottom of the pattern, we see two equal or nearly equal lengths connecting the top and bottom. Two diagonals tend to be a bit squatter looking on the side with two touches (FG and IJ), so there's a bit of a difference between single- and two-diagonal shapes, making it easier to determine which is which.

In the top-right panel, trends EF and EG form the two longest segments. Notice how the lines do *not* connect to the bottom of the diamond (instead, price touches the sides and they straddle the bottom).

The bottom-right panel shows the pattern flipped upside-down. Trends HI and HJ connect the top and bottom. Again, they straddle the diamond's top peak where the trendlines join. Toshchakov says that with two-diagonal shapes, the breakout can be in either direction.

Single diagonal. I used 388 diamond tops found from May 1996 to April 2020. I went through each pattern and marked whether it was a single- or two-diagonal pattern and logged when the top and bottoms of the pattern appeared. Table 24.11 shows the results in the lower portion of the table.

If you ignore whether the pattern is a single- or two-diagonal configuration, a downward breakout will happen 54% of the time and an upward breakout will happen 46% of the time. That's the benchmark for the breakout direction (from Table 24.4), which is what I want to test.

Table 24.11 Diagonal Diamonds

Description	Identification
Single diagonal, bottom before top	Bottom forms before the top. The longest trend connects the top and bottom. Pattern looks like a diamond pushed to the right. The breakout is supposed to be downward but is actually upward most often.
Single diagonal, bottom after top	Bottom forms after the top. The longest trend in the diamond connects the top and bottom. Pattern looks like it's been pushed to the left. This configuration correctly predicts an upward breakout but not all of the time.
Two diagonal	Looks like a head-and-shoulders, top or bottom. Two lines of nearly equal length connect the top and bottom. If the bottom trendline touch comes after the top touch, the breakout direction is likely to be upward.

	Correct?	Benchmark
Single diagonal, bottom before top, down breakout	58%	54%
Single diagonal, bottom after top, up breakout	65%	46%
Two-diagonal, bottom before top, down breakout	57%	54%
Two-diagonal, bottom after top, up breakout	52%	46%

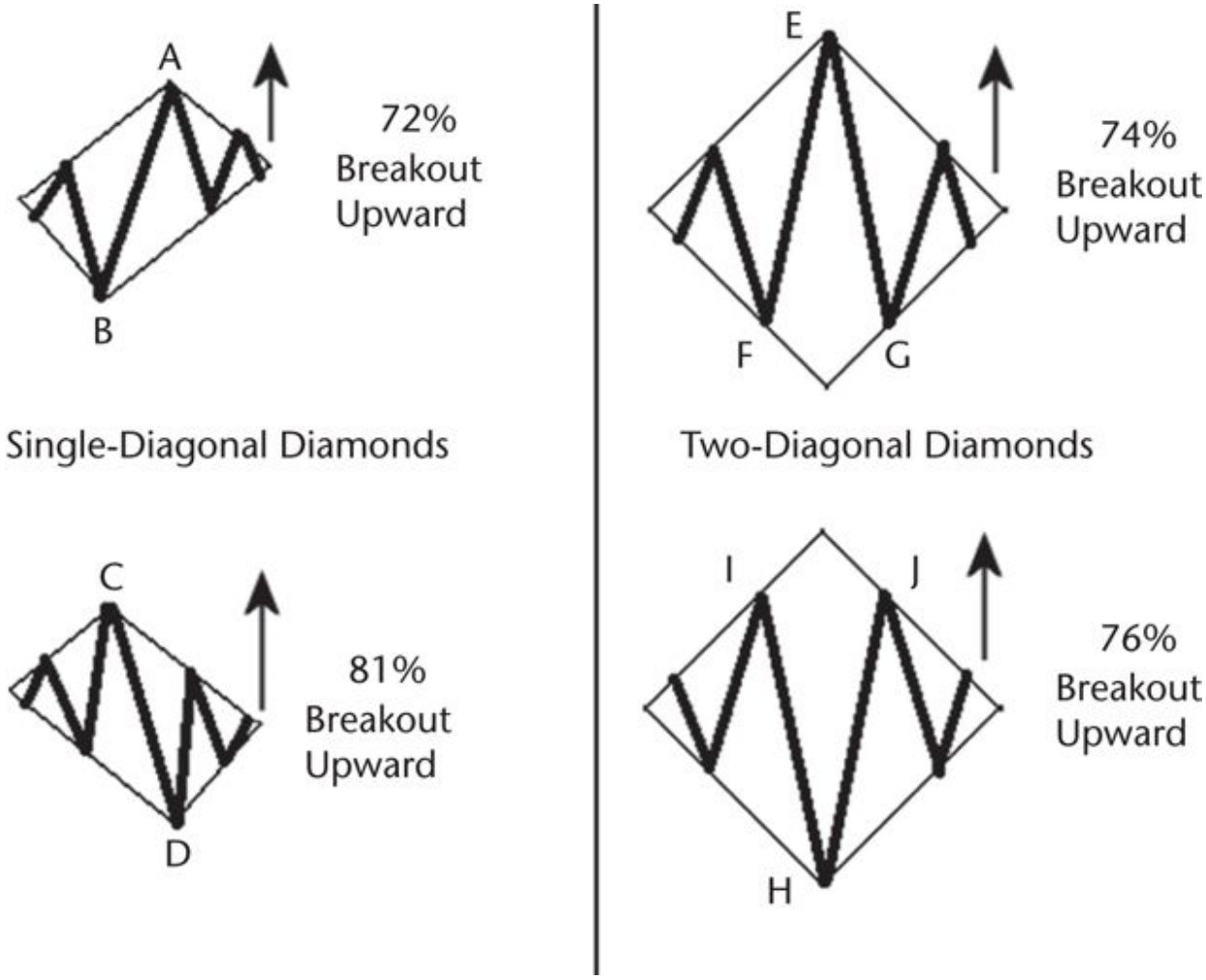


Figure 24.6 The predicted breakout direction for diagonal diamond patterns.

I sorted the diamonds into single- and two-diagonal shapes and sorted by whether the top or the bottom of the pattern came first. The configuration shown at AB in the figure, where it's a single diagonal with the bottom coming before the top, is supposed to break out downward. I found that worked 58% of the time. That's better than the benchmark's 54%, but it's too close to random for my taste.

Configuration CD in Figure 24.6 shows a single diagonal with the bottom coming after the top. His technique says these types of diamonds break out upward. Indeed they do 65% of the time compared to the benchmark's 46% of the time. That's a significant improvement.

Two-diagonal. For two-diagonal patterns, I checked whether the top or bottom came first and checked the breakout direction. The benchmark rate doesn't change with 54% of diamonds breaking out downward and the other 46% breaking out upward.

For two-diagonal patterns, when the bottom (F) happened before the top (E in pattern EFG), I found they break out downward 57% of the time, a slight improvement over the 54% benchmark.

The two-diagonal, bottom (H) after the top combination (I in HIJ pattern) correctly predicts an upward breakout 52% of the time. That's almost random. Of course, Toshchakov doesn't claim that the two-diagonal has a defined breakout pattern, but I checked anyway. Figure 24.4 show a good example of a two-diagonal pattern with the bottom coming before the top. It's supposed to break out upward, which it does in this example.

How do you apply this to your trading? Only single diagonals with the bottom after the top work well enough to consider using. First, you have to determine if the diamond is a single- or two-diagonal pattern. Once you figure that out, check to see if the bottom comes after the top. If so, there's a 65% chance price will break out upward.

Figure 24.6 shows a single diagonal with the bottom after the top. And look! It breaks out upward. Figure 24.5 shows a single diagonal with the bottom after the top and a downward breakout when it should be upward.

Sample Trade

Figure 24.7 shows a diamond top Lorenzo traded. He first noticed the diamond well after it formed—during the throwback to be exact. The throwback's hooking pattern caught his attention, and he searched for a nearby chart pattern. In this case, he saw a diamond top, but was it a valid diamond?

Lorenzo reviewed the identification guidelines and found that price was rising into the pattern, verifying a top. The diamond shape, although pushed to one side, had an adequate number of touches of each diamond boundary (the trendlines). Volume receded from the middle of the pattern to the end, so it had a downward trend.

Breakout volume was high but nothing to write home about and well below the peaks of a few days earlier. Price also gapped upward (C), suggesting buying enthusiasm. However, he knew that breakout day gaps resulted in performance that was not as good as those diamonds without gaps. That made him nervous.

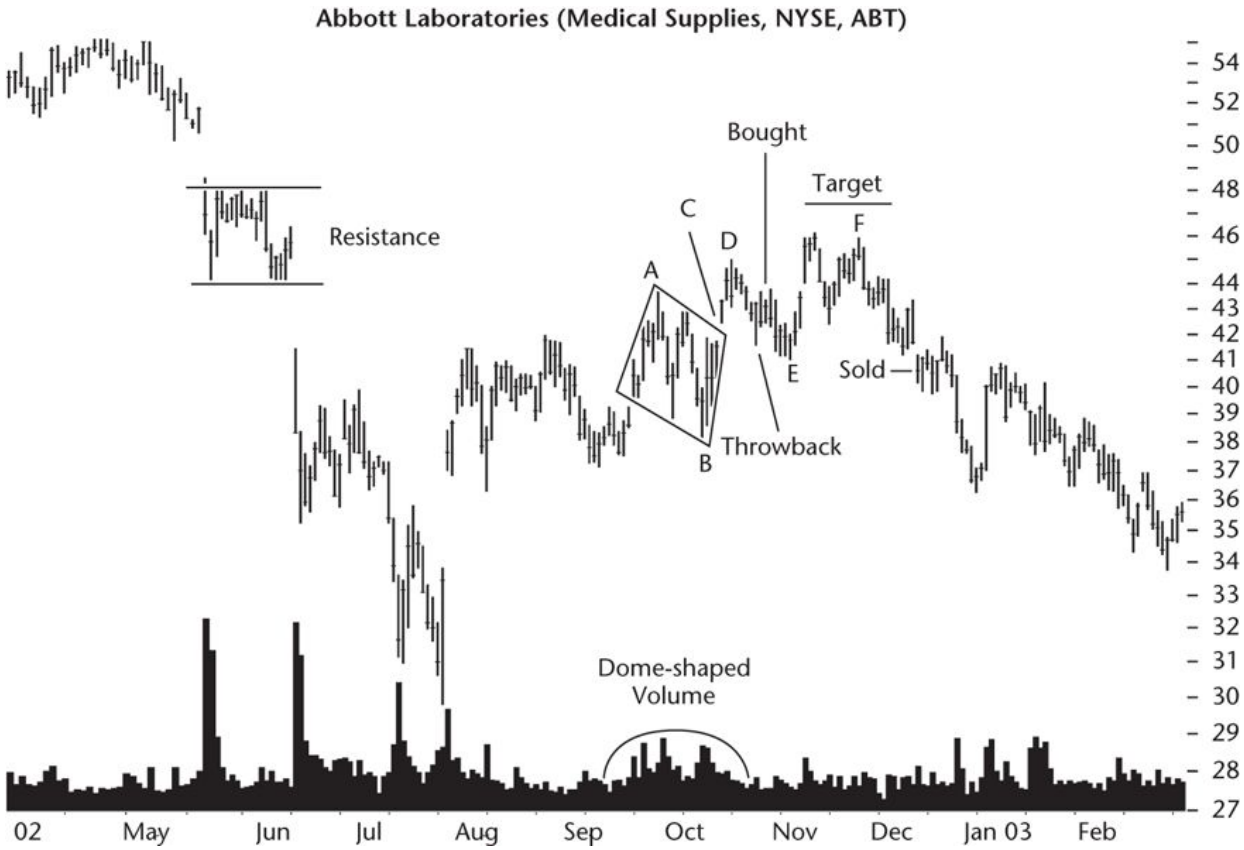


Figure 24.7 Shown is a diamond top with dome-shaped volume. To get a price target, compute the formation height (A – B) and add it to C, the breakout price. The result is the target price for upward breakouts.

Since the breakout was upward, he checked for overhead resistance and saw the long island pattern in May. Price tested the region at point D, leading to the throwback. Still, he knew that price would eventually pierce that resistance, perhaps after multiple attempts to break through.

He computed the predicted price target using the diamond height projected upward from the breakout price. “The target was at the high end of the resistance area,” he said. “I hoped price would reverse there.” That meant watching the stock closely and selling when it neared the target to maximize profit. On the downside, if price dropped, he would close out his position just below the diamond bottom (point B).

Two days after price closed the gap in the throwback, “I bought at 43.”

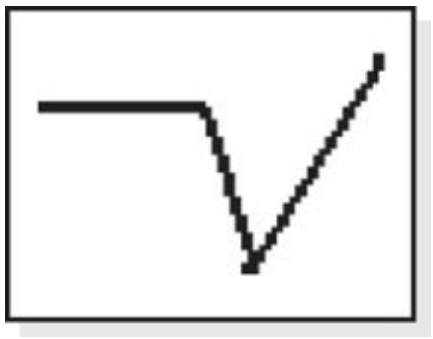
In the days that followed, the stock dropped. “It's been my experience that many of my trades either do well right from the start or fall apart. This looked as if it were going to crumble, so I placed a stop-loss order at 37.93.” That was below the round number support at 38 and just below the diamond bottom.

Price climbed. When they closed above the prior minor high, point D, he raised his stop to just below point E, a nearby minor low. Price continued higher for two more days, then retraced its gains, attempted another high (point F), and then started a long slide.

“I know from experience that failure of the stock to make a higher high [at point F] was a bearish sign [a 2B pattern], but hoped the stock would rebound. It didn't. Instead, price gapped down and tripped my stop. I took a 5% loss.”

What did he do wrong? I would not have taken this trade because of nearby overhead resistance. Since there are plenty of chart patterns in other stocks under more promising circumstances, why take one with high risk and limited profit potential? On the plus side, he used a stop-loss order and raised it as price climbed. Eventually, the order took him out for a small loss. That is the way it should work when a trade goes bad. Let your profits run and cut your losses short.

25
Diving Board



RESULTS SNAPSHOT

Appearance: Price moves horizontally for several weeks to months, forming a flat base followed by a sharp plunge.

Upward Breakouts

Reversal or continuation	Long-term bullish continuation
Performance rank	1 (best) out of 3
Breakeven failure rate	4%
Average rise	73%
Volume trend	Upward
Throwbacks	N/A
Percentage meeting price target	62%
See also	Cloudbanks, dead-cat bounce

Late in 2019, individual stocks were struggling to climb higher in the rarified atmosphere of high altitude. Many moved sideways, forming a flat base going into 2020.

Then Covid-19 came along and started killing hundreds of thousands of people and infecting millions worldwide, so far. The indices tumbled, sinking 35%, sending them into a bear market. Individual stocks have been decimated, dropping up to 70% from their peaks made late last year.

In late March 2020, the markets started to rebound on hope that the recovery is in sight. Poor corporate earnings usually send their stocks down and the larger names pull down the general market as well. But the markets shrug off the bad news (a bullish sign). Future quarters may also suffer, so there's lots of risk (or potential reward) to buying now. Uncertainty is why the markets are so volatile, gaining or losing thousands of points in one trading session.

The pattern we're seeing in individual stocks is called a diving board. It's a flat base (the board) followed by a steep plunge and then a recovery. The pattern shares a shape similar to the cloudbank chart pattern, but the details are different.

I discovered the diving board pattern on Thanksgiving Day, 2010, when I went shopping for stocks to buy. I was on the weekly scale and saw a flat base followed by a plunge (diving into the water) and a straight-line recovery (returning to the surface and climbing out of the water). The flat base reminded me of a diving board and subsequent plunge into the water, hence the pattern's name.

This pattern is one I search for frequently when the markets are soaring to new highs and many good stocks are overvalued (priced too high). I switch to the weekly charts and search for diving board patterns. They represent good value with the potential for long-term appreciation. But they are not low risk, especially if you buy near the plunge low (I'll discuss what *plunge* means later).

The above Results Snapshot shows a high average rise and small failure rate. Those two are like opposite ends of a seesaw: When one goes up, the other goes down. Because the pattern is so tall, the percentage meeting the price target (62%) is not as high as I like to see. It's a warning that making a profit from this pattern may not be as easy as the low failure rate suggests.

The numbers also come from the weekly scale, so there are only two other chart patterns to compare against. Searching for the ultimate high on the weekly scale gives much higher results than doing so on the daily scale, so don't compare the results of this pattern to those on the daily scale.

Let's take a look at this chart pattern.

Tour

Figure 25.1 shows an example of what a diving board pattern looks like on the weekly scale. The *board* portion of the pattern is at A (I emphasize *board* because I refer to it often in this chapter. It's the flat movement before the plunge). Price moves horizontally with the bottom of the board flat or nearly so. The board is often weeks to months long. Following the end of the board, price doesn't just drop or meander lower, it plunges. So I call the steep drop (to B) a *plunge* (that is, the drop from the board end to the subsequent low), a term I'll refer to in this chapter.

The plunge is often severe, carrying price lower for several weeks to months. If a swing trader can determine when the stock bottoms, there's money to be made riding the recovery. You can think of this pattern as a small or shorter version of a cloudbank pattern (see the chapter on cloudbanks) and ride the stock back to the cloud base (the board).

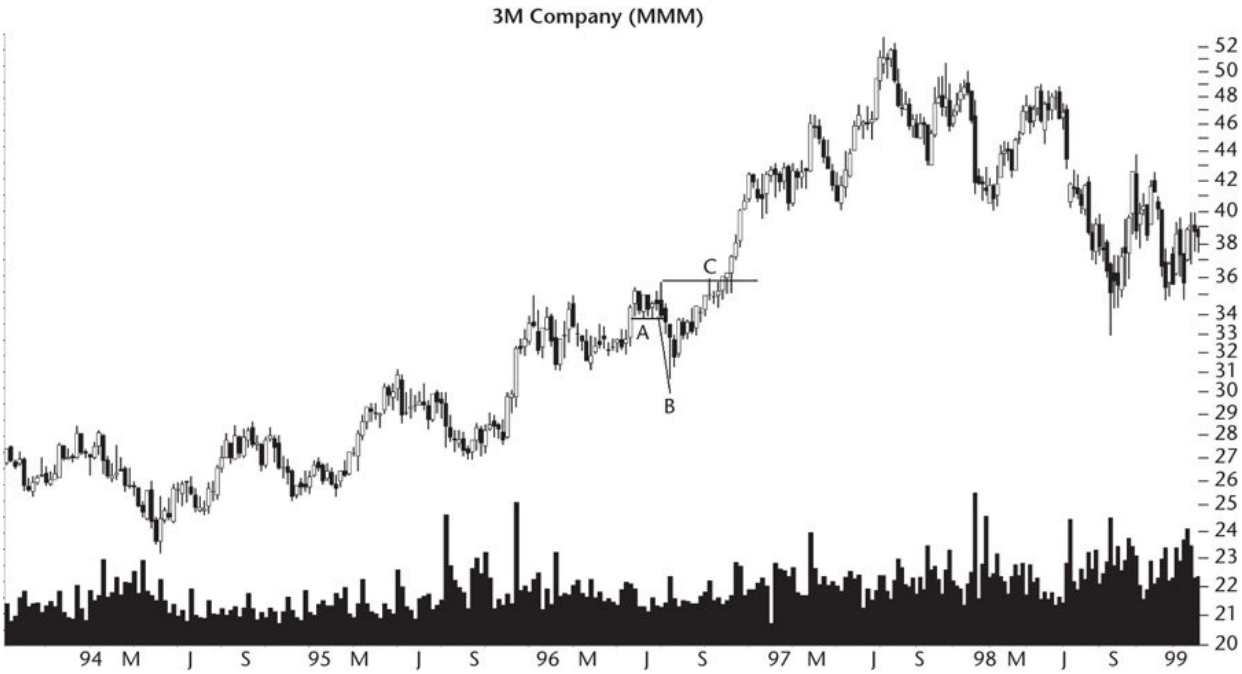


Figure 25.1 This diving board pattern leads to a large upward move. Note: weekly scale.

Trading the recovery is difficult to do. The diving board pattern doesn't have the large-drop requirement that a cloudbank does (a drop of 40% or more), so a late entry will diminish the potential and

there's no guarantee that price will rise back to the board, either. I'll describe how well this setup works later in the chapter (Table 25.11). In this example, price *does* return to the board and breaks out upward at C.

The preferred method of trading diving board patterns is to wait for price to close above the top of the board (top of the chart pattern). Buy the stock and hope it continues rising. The statistics in this chapter discuss this setup.

Identification Guidelines

Table 25.1 shows the identification guidelines. Refer to Figure 25.2 for additional guidance. In your quest to find these patterns, imagine driving down the road and hitting a pothole. The road is the board, and the pothole is the plunge. In technical terms, find a flat base followed by a sharp sell-off. Once price recovers, it can soar. You want to catch price as it reaches for the sky.

Appearance. Switch to the weekly scale when searching for diving board patterns because these are long-term patterns. Price moves horizontally, forming the board, often having a flat bottom, but ignore the appearance of the top.

Table 25.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price moves horizontally, forming a flat base followed by a sharp plunge. Use the weekly scale, but this pattern will appear on the daily charts, too.
Board	This is the support region before the plunge, and it does not include the plunge.
Plunge	Deep plunges tend to result in better performance than smaller ones. However, I didn't set a minimum depth for the plunge.
Volume	Upward.
Breakout direction	Upward. A breakout occurs when price closes above the top of the board (above the highest price in the pattern).
Duration	The average width of the board (not including the plunge) is over 5.5 months long, and the duration from start of the board to the bottom of the plunge is 7 months. Avoid short boards.

Figure 25.2 Note: weekly scale. The bottom of this board (A) is flat followed by plunge B. A broadening top appears at E.

The figure shows the board portion of the pattern as the horizontal line at A. Price moves sideways for about two months and finds support on the line. Sometimes the bottom of the pattern isn't flat, but the sideways path should be obvious.

I like to see price touch the board often, setting up a support area. The length of the board is often months and in rare cases can be a year or longer.

Board. The board portion of the pattern is the flat support region (A) before the plunge (B). It does not include the plunge.

Plunge. Price drops after the board ends. The plunge varies from a small amount (single digits) to 98% with the median plunge measuring 14% (average 19%) for those patterns with upward breakouts. As I mentioned, the plunge is the drop from the end of the line at A to the bottom at B.

Volume. Volume trends upward from the start of the board to the bottom of the plunge. Often, you'll see volume rise as price plunges, especially at or near the bottom.

Breakout direction. This is always upward, by definition. An upward breakout occurs when price closes above the top of the chart pattern. Ignore the pattern if price fails to close above the top of the pattern or if price makes a lower plunge.

In this example, the top of the pattern is C and an upward breakout happens when price closes above the line at D. At E, the stock forms a broadening top before continuing to move higher.

Duration. The table gives guidance for how long the diving board pattern is. I like to see a diving board patterns at least one or two months long.

Focus on Failures

Figure 25.3 shows a chart busy with lines on the weekly scale. Let's discuss each one. Line A shows lots of support with price dropping to, or coming near to, the line. Price plunges on the way down to B, completing a diving board pattern. Price makes a double bottom (with not-so-equal bottoms at B and B1) and recovers. The stock rises to the bottom of the board (A) and continues higher.

Figure 25.3 Note: weekly scale. A number of potential diving board patterns appear on this chart, but none of them have upward breakouts, which is a close above the top of the pattern.

Unfortunately, price doesn't break out upward (a close above the peak price in the board). So ignore this pattern. It fails to perform as expected.

Points C, D, and F are additional diving board patterns. Price rests on support, touching or coming close to the horizontal support lines multiple times. Price plunges to E (which shares the plunge with diving boards C and D), and plunge G for board F.

Boards A and C are in uptrends, and F is in a downtrend. A check of the numbers shows that there is a negligible performance difference (after the breakout) based on the trend direction from the trend start

to the pattern's start. In other words, boards A, C, and F should perform similarly even though they appear in uptrends (A, C) or a downtrend (F).

The diving board patterns shown fail to break out upward and that accounts for most of the pattern failures. However, if price fails to rise very high (more than 5%) after the breakout, then that's a failure, too.

Statistics

Table 25.2 shows general statistics. I did not tally statistics for bear markets because the patterns ended around the same time, toward the end of the 2007 to 2009 bear market. You don't get the diversity that I seek in these statistics.

Number found. Because I'm using the weekly scale, there will likely be fewer patterns than if I used the daily scale. Even so, the diving board pattern is plentiful. I used data from May 1990 to June 2019, finding patterns in 513 stocks. Not all stocks covered the entire range, and some no longer trade.

Reversal (R), continuation (C) occurrence. Most of the diving board patterns acted as continuations of the upward price trend, not reversals. Remember, I'm only looking at upward breakouts.

Table 25.2 General Statistics

Description	Up Breakout
Number found	760
Reversal (R), continuation (C) occurrence	37% R, 63% C
Reversal, continuation performance	79% R, 69% C
Average rise	73%
Standard & Poor's 500 change	22%
Days to ultimate high	455
How many change trend?	72%

Reversal/continuation performance. Reversals outperform continuations by a handsome margin, but that may be because samples were fewer (278 versus 482). Additional samples may narrow the performance gap.

Average rise. Because I'm using the weekly scale, price trends longer than on the daily scale (because of the way I look for the ultimate high). So we show a huge average rise of 73%. The median (or midrange) value is more sedate, at 42%. That kind of a gain would still be a nice addition to your wallet or purse. Unfortunately, such a large gain usually won't happen overnight (except in your dreams).

Standard & Poor's 500 change. The table shows the average gain in the S&P 500 index from the breakout of the diving board pattern to the ultimate high for the pattern. The pattern outperforms the index and that's typical for chart pattern performance, regardless of the pattern type. Even so, having the general market help carry the stock is a nice addition.

Days to ultimate high. The time to reach the ultimate high is about 15 months. Keep in mind that the average rise is 73%, so price climbing that far will take longer than smaller rises. Nevertheless, this is a chart pattern best suited for long-term investing and not swing trading.

Table 25.11 discusses statistics to trade the recovery from the plunge low, something that may interest shorter-term traders.

How many change trend? Almost three-quarters of the patterns (72%) will see price rise more than 20% after the breakout. That's a huge percentage. Again, it probably has more to do with the weekly scale and how it affects the rise from the breakout to the ultimate high.

Table 25.3 shows cumulative failure rates for the diving board pattern. I measure failure by how often price fails to reach a target. For example, I found that 34 or 4% of diving board patterns failed to rise more than 5% after the breakout. An additional 68 patterns, for a total of 102 (68 + 34) or 13% of the total, failed to see price rise more than 10%.

Table 25.3 Cumulative Failure Rates

Maximum Price Rise (%)	Up Breakout
5 (breakeven)	34 or 4%
10	68 or 13%
15	61 or 21%
20	48 or 28%
25	43 or 33%
30	42 or 39%
35	30 or 43%
50	108 or 57%
75	92 or 69%
Over 75	234 or 100%

Notice that 234 patterns (bottom of the table) show price rising over 100%. Out of 760 samples, the 234 represent 31% of the patterns. The results suggest there's a decent chance of having a whopper of a gain lurking out there.

Table 25.4. I decided to erase the table of breakout statistics because it contained only two rows. The first row said that all breakouts are upward from a board. A breakout occurs when price closes above the highest peak in the board portion of the pattern.

The second entry discussed how performance was distributed across the yearly high–low range. Samples were too few in two of the ranges, leaving the bulk of the patterns approaching the 73% average rise shown in Table 25.2.

Table 25.5 quantifies performance by size.

Height. I measured the height of the pattern from the top of it to the bottom of the plunge and sorted patterns by the height as a percentage of the breakout price. Tall patterns outperform short ones, and that's typical for chart patterns of all types. Indeed, height is a superior indicator of performance. However, just because your diving board pattern is tall does not guarantee that it will see price rise more than the average. Similarly, a short diving board pattern may show performance that blows the doors off your Pinto.

Width. Wide patterns perform better than short ones. Width measures from the start of the board to the bottom of the plunge (not to the end of the board). The median width, which determines narrow or wide, is almost 7 months long.

Height and width combinations. Because tall patterns outperform and wide patterns outperform, you'd expect the combination of tall and wide to show the best performance. Indeed, that's what the table shows. However, the worst performance doesn't come from short and narrow patterns as you might expect, but from tall and narrow ones.

Table 25.5 Size Statistics

Description	Up Breakout
Tall pattern performance	79%
Short pattern performance	68%
Median height as a percentage of breakout price	26.9%
Narrow pattern performance	67%
Wide pattern performance	80%
Median width	204 days
Short and narrow performance	69%
Short and wide performance	65%
Tall and wide performance	86%
Tall and narrow performance	61%

Table 25.6 shows volume-related statistics. However, because the pattern is so long and it's on the weekly scale, I don't think volume matters (because it'll be irregular looking). It might be more important to check fundamental factors to see what's moving the stock.

Volume trend. Volume trends upward most often probably because of an increase of share turnover as price drops to the plunge low.

Rising/Falling volume. A rising or falling volume trend (from pattern start to plunge low) does not affect performance.

Breakout day volume. Heavy breakout volume pushes price higher than does light volume, but I'm not sure this is meaningful. Few people are searching for diving board patterns anyway, but when price breaks above a prior peak (the breakout), I'd expect volume to increase when the bulls go on a buying spree and push price higher.

Table 25.7 shows how often price will drop and touch a stop-loss order placed at various locations on the board, not including the plunge. I measured the *drop* from the week *after the breakout* to the ultimate high and compared it to the various points in the board (from the highest peak to the lowest low before the plunge occurred).

Price will drop to the top of the pattern 74% of the time and less often to the middle and bottom of the board. I'm surprised that the 74% number isn't higher, but it's like buyers are saying, “We want price to go higher. Now!”

Table 25.6 Volume Statistics

Description	Up Breakout
Volume trend	66% up
Rising volume trend performance	73%
Falling volume trend performance	73%
Heavy breakout volume performance	75%
Light breakout volume performance	70%

Table 25.7 How Often Stops Hit

Description	Up Breakout
Board high	74%
Board middle	23%
Board low (plunge not included)	7%

If you wish to use this number, then placing a stop at the top of the pattern will trigger 74% of the time, on average, if your trade behaves like the average. Placing it in the middle of the board will cut the stop-loss triggers substantially, to 23%. Obviously, you'll want to determine how big a loss you'll incur if the stop triggers and adjust the stop placement accordingly.

For long-term holds, for which this pattern is best suited, you may wish to not place a stop and just monitor performance periodically. Remember, it takes 2 years for price to reach the ultimate high, on average. If you use a stop, you'll likely be taken out of the trade before it reaches its maximum price.

Table 25.8 shows how the diving board pattern has performed over the decades.

Performance over time. The 1990s had the fewest samples (167) and the 2010s had the most (395), so maybe the descending performance reflects the sample count. That is, as more samples become available, performance drops.

Failures over time. Failures show a similar trend. The bigger the gain, the lower the failure rate.

Table 25.9 is supposed to show performance for busted patterns, but I didn't analyze them for this pattern. Thus, you won't find Table 25.9 in the book.

Trading Tactics

Table 25.10 shows trading tactics.

Measure rule, targets. The sample trade will give an example of how to use the measure rule. I found that if you use the full height of the pattern from the top of it to the low at the plunge and add the height to the top of the pattern, price will reach the target 62% of the time. That's if your pattern behaves like the ones I found.

For a closer or farther target, adjust the height in the calculation accordingly. The bottom of the table shows how often the measure rule works for varying heights used in the calculation. For example, if you cut the height in half, the stock will reach the target 79% of the time on average.

Table 25.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout
1990s	101%
2000s	76%
2010s	60%
Performance (above), Failures (below)	
1990s	2%
2000s	3%
2010s	6%

Table 25.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the pattern from the top of the board to the plunge low. Add the height to the high price in the board. The result is the target price. The bottom half of the table shows how often this works.
Stop location	Place a stop at the location of your choice, using the results in Table 25.7 as guidance. You may wish to avoid using a stop to remain in the trade longer.
Ride the bounce	Buy the stock after the plunge completes with the expectation that price will recover to the board. This is high risk.
Lower plunge	Avoid diving board patterns that make a second, lower plunge. Figure 25.5 shows an example at B1.
Buy breakout	Place a buy stop when price closes above the peak price in the board portion of the pattern. Be prepared to hold for years to achieve the highest price but monitor the trade.

Description	Up Breakout
Percentage reaching half height target	79%
Percentage reaching full height target	62%
Percentage reaching 2× height	41%
Percentage reaching 3× height	29%

Once you know the height, you can divide it by the breakout price and check it with Table 25.3, failure rates. In the Sample Trade, we'll find that the height of a diving board pattern is 16.49 with a breakout price of 80.53 or 20.5%. Table 25.3 says that 28% of the patterns will fail to see price rise more than 20% (the closest to 20.5%). So you have a 72% chance of having a winning trade. That's quite good, but it depends on how you trade, of course.

Stop location. Table 25.7 discusses stop placement, so make sure you check that table to understand the likelihood of being stopped out. Also, convert the potential loss into a percentage of the buy price. If the percentage is high, then you may wish to adjust the stop

placement so you won't lose too much. However, with long-term trades like this one, you may wish to *not* place a stop. Just monitor the stock periodically and sell if the stock shows weakness or if the fundamentals/technicals deteriorate enough to indicate a sale would be prudent.

Ride the bounce. You can trade a diving board pattern like you do a cloudbank pattern. The bottom of the board (the part before the plunge) would be the target. Make your entry after the plunge ends, if you can tell when that occurs (good luck with that!). The difference between those two points will be your profit. If it's high enough to risk a trade, buy the stock and hold until price returns to the board.

Lower plunge. If the stock makes a second drop, one that takes price down to or below the first plunge, avoid trading the pattern. It has a higher likelihood of failing. The Sample Trade shows an example of this at point B1 in Figure 25.5.

Buy breakout. To enter the trade in a timely manner, find the highest peak in the board portion of the diving board pattern. Set a buy stop a penny above this price and wait for the order to hit. Expect to hold the stock for months to a year or two to achieve the full potential of the diving board pattern. If the stock doesn't go up, then don't buy it (that's a joke).

Bounce Trading

Table 25.11 shows statistics that may help you decide if a bounce trade is worthwhile. The table applies only to bull markets.

How many diving board patterns don't see price rise to the board, that is, they breakout downward, not upward? Answer: 29% (not shown in the table). If you try to buy after the plunge ends and hope to see price return to the bottom of the board, you'll be wrong 29% of the time, on average, if your trade follows the patterns I found. That means you should be able to make money 71% of the time using this setup. You'll want to place a stop below the bottom of the plunge and consider adjusting it as price rises.

Plunge depth versus performance. I measured from the lowest price in the board to the plunge low for all patterns in bull markets, sorted by breakout direction. The table shows the median (midrange) plunge (14%, 19%). If price rises from the plunge low to break above the top of the pattern (upward breakouts), the depth of the plunge didn't matter much (gains of 75% versus 72%). However, downward breakouts tell a different story. Plunges shallower than the median 19% see price retrace 22% on average before heading lower and breaking out downward. Deeper plunges see price rise an average of 62% before heading back down.

Table 25.11 Bounce Trading

Description	Up Breakouts	Down Breakouts
Performance after shallow plunges	72%	22%
Performance after deep plunges	75%	62%
Median plunge	14%	19%
Performance from short boards	66%	30%
Performance from long boards	81%	55%
Median board width	169 days	176 days

What does this mean for trading? If you're trying to catch the bounce, the larger the drop from the board, the larger the bounce. I found this

same behavior in an event pattern called the dead-cat bounce.

Board length versus performance. The median length of the board doesn't vary much depending on the breakout direction. However, long diving board patterns (from pattern start to plunge start) seems related to performance. Long patterns outperform short ones substantially as the table shows, for both breakout directions. Please note the difference between board length in this table and the width in Table 25.5. Table 25.5 includes the plunge, but Table 25.11 does not.

Experience

Let me share one diving board trade with you. It's a cautionary tale that things might not work out as you expect or hope. I show the setup in **Figure 25.4** on the weekly scale.

Williams Companies Inc. (WMB) started building a diving board in the summer of 2016 (A), and it continued through November 2017.

I'm scratching my head looking for the plunge. I *think* it's at C. The drop below the board low represents a decline of 3%. That's well short of the median plunge shown in Table 25.11 (14%).

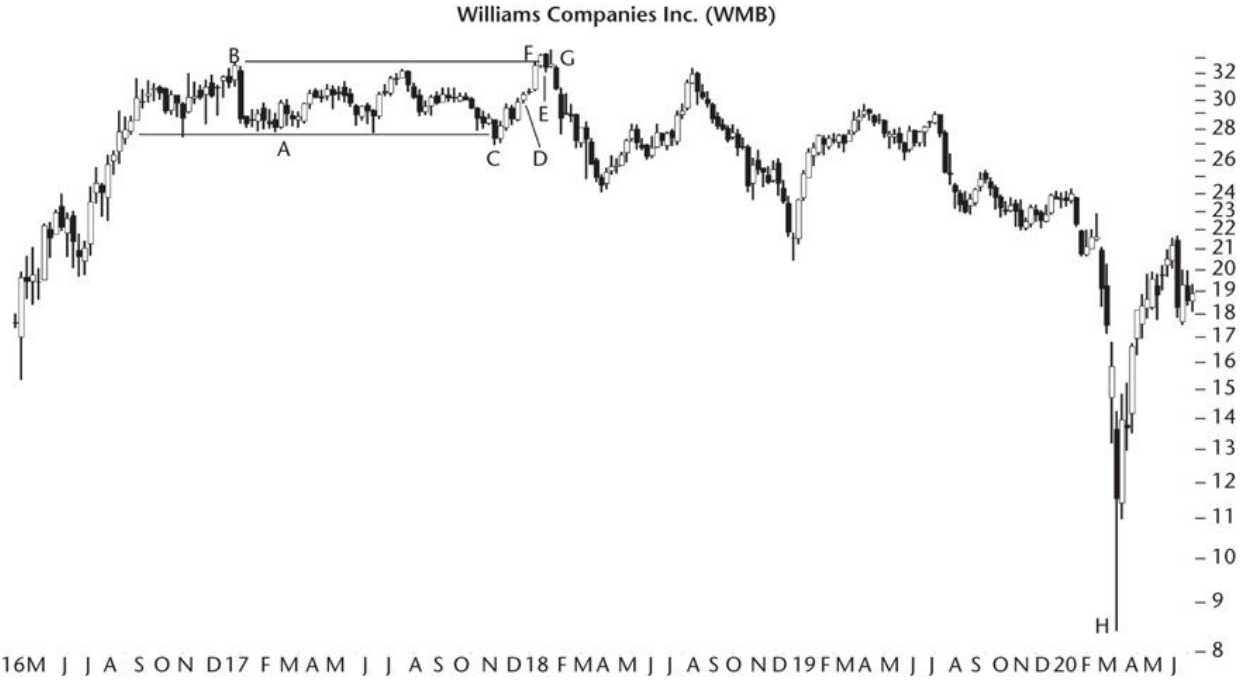


Figure 25.4 Note: weekly scale. A diving board trade resulted in a small profit.

Apparently that didn't bother me because I made no mention of it in my notes. I was focused more on the flat base as a launching pad and a zone of future support in case the trade went bad.

Let's go through the pattern. The board is at A, a flat base with price touching the bottom of the range several times over the months. The top of the board is at B. A close above B means an upward breakout. C is the plunge. A close below C would mean a downward breakout.

On 19 December 2017, I bought and show the approximate date (weekly scale) at D. Notice that I didn't wait for an upward breakout.

Here are my notes to the trade. I bought less than a full position (about 75% of full size), with the position size automatically determined by market and stock volatility. My computer calculated a volatility stop of 28.77 for a potential 4.6% loss, but this was a long-term holding, so I didn't use a stop.

Upside target was 47. That was the first sign of significant resistance set up by two valleys in 2015.

The stock and market trends were up over 1 and 2 months but mixed at 6 months (stock was down but market was up). The industry was mixed over those three measurement periods, too, with about half of the stocks trending higher and half not. I like to see my trades have all three, stock, market, and industry trending upward. Finally, the stock's relative strength against the Standard & Poor's 500 index was rising, meaning the stock was outperforming the general market.

“Buy reason: Diving board has completed and price is moving up. Has a 4.04% yield at 30.14, which is very good. So this is like a utility but with upside potential if the diving board plays out. S&P says buy, as of 14 November 2017 when stock was at 27.83. Says dividend was cut 69% in 2016. Wow. Insiders: Mixed buying and selling. Small buying 1k, 5k, 15k, 17k in May–June. Selling of 10k and 81k in May. Other selling in Aug, Sept, Nov, biggest was 272k in Sept. Small buys in Aug (5k) and Nov (6k, 6k).

“Just saw now, after I bought, that they have 141% debt as percentage of equity, or $21B in long-term debt. Current ratio is 0.97. Wow. Payout ratio is 193%. Jeepers. I bought this without doing enough investigating, I think. This sucker is HIGH risk. S&P says it's undervalued (fourth with five being most undervalued). Says percentage of long-term debt to capitalization is 60%, but that's looking forward a year, I think. Statistics show the same benchmark in 2016 as 60%, up from 58.5% in 2015. Apparently they don't view debt as a pressing problem.”

The stock broke out upward at F. However, at E, I changed my mind about the stock. Here's what I wrote for the sale. “Date sold: 18 January 2018. Sell reason: Weakness. Industry is mostly headed

lower. This is a high debt, high risk co. They had permission to build a pipeline denied a week ago, and the stock has dropped on the news. I think it's time to get out, near the top. Based on the bid/ask spread, this looks to open lower, below 32. Yuck. Filled at 32.24, slightly lower than yesterday's close."

The stock made a slightly higher high at G and then started down. Covid-19 pulled the rug out of the stock at H, where it bottomed at 8.41, or 74% below my sale price.

My spreadsheet of the trade says I made 7% but didn't collect any dividends along the way. I was late entering and late exiting. I'm not so sure I agree with that assessment. The optimum buy location should be a penny above the breakout price, and I bought in well before that, but also well above the bottom of the board. Perhaps I was thinking that the bottom of the board was the optimum entry price. If that's the case, then yes, I was late getting into the trade.

As to the exit, I sold (daily chart, not shown), right at the valley of the double top. *Sigh*. If I had sold it either 3 days earlier or 3 days later, I'd have a perfect exit. And yet, selling when I did locked in a small profit and avoided a huge loss.

Here are my lessons from the trade.

- Lesson: Do better homework. Finding out the company was loaded with debt after I bought was a mistake.
- Lesson: "Stocks that cut their dividend rates outperform a year later." I learned this when researching dividends in my book, *Fundamental Analysis and Position Trading: Evolution of a Trader* (Wiley, 2013). Owning a stock that cuts the dividend is painful, but the year-ahead performance can be rewarding.
- Lesson: Use a buy stop a penny above the top of the pattern as the entry price. Had I followed this, I'd have made less, but it's the proper way to trade a diving board.
- Lesson: When fundamentals change, sell. That's what I did when I learned the company lost permission to build the pipeline. Selling locked in a small profit instead of a whopper of a loss.

Sample Trade

Figure 25.5 shows a trade Rich made in a diving board pattern, so let's dissect it, beginning by crunching the numbers.

The board begins the week of 7 May 2018 (A) and ends on 17 September 2018 (A1), for a length of 134 days. Table 25.11 says that it's a short board. Note that the length of the board does not include the plunge (A1 to B), otherwise the width is 176 days (narrow for Table 25.5) as measured from A to B. Both tables suggest underperformance.

The height of the diving board pattern for Table 25.10 is the difference between the high price in the board (80.53, shown as the horizontal line ending at C) and the plunge low (B), which is at 64.04, for a height of 16.49. If we assume an upward breakout, the height to breakout price ratio would be 16.49/80.53 or 20.5%. That's short according to Table 25.5, and it also suggests underperformance.

Figure 25.5 Note: weekly scale. Rich made a trade using a diving board pattern.

Let's talk about the measure rule. The height of the pattern from the top of the board to the plunge low is 16.49 as I already mentioned. Adding the height to the top of the pattern gives a target of 80.53 +

16.49 or 97.02. Table 25.10 says there's a 62% chance of making it to the target using the full height (which we did). Using half the height would improve the chances to 79% (from Table 25.10) of reaching 88.78.

For bounce trading (Table 25.11), the plunge measures from the bottom of the board (73.62) to the plunge low as a percentage of the board low, or (73.62 – 64.04)/73.62 or 13%. The plunge is shallow and that suggests underperformance. We already calculated the board length and found it to be short, too.

The statistics suggest this pattern will underperform. Regardless of the probabilities, anything is possible, so Rich decided to trade the pattern anyway.

“I searched and searched and searched but couldn't find any reason for the plunge from A1 to B. Because earnings were due to be announced the week of candle B, I thought that maybe the smart money was selling ahead of the earnings announcement.”

He wasn't lucky enough to catch the candle B rise. Indeed, he was looking for a longer-term hold to capture some of the mouthwatering results this chapter describes. He understood that the results are based on trading hundreds of diving board patterns perfectly, but grabbing a share of a 73% average rise was too tempting to ignore.

“The week before I bought, the company announced annual earnings [not to be confused with the quarterly earnings at B] which the market liked [price continued higher, for a time]. I placed a buy stop a penny above the top of the pattern and it filled at 80.54 [at C].”

Because predicted performance of the pattern was dismal (as described above), he decided to use half the height as a measure rule target, or 88.78.

Looking at the chart, the drop two months after B (shown as B1) didn't concern him because he hadn't bought the stock yet. However, the stock did form a confirmed double bottom, which was gratifying, but he didn't like how volatile the stock was. The quick drops were unnerving.

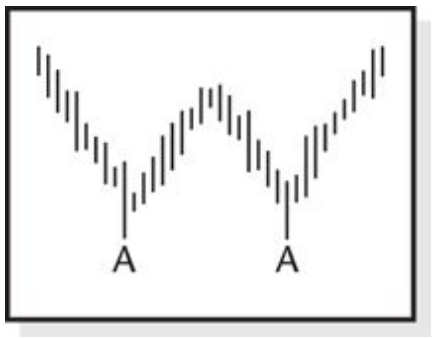
After buying at C, the stock retraced and moved higher to D, peaking at 86.62, just short of the 88.78 target. He hoped the stock would

continue higher, but he also knew the next earnings report was due on 2 May 2019 (a week after the stock peaked).

“When the company announced earnings, the stock gapped open lower, so I sold this bad boy at 80.13.” On the trade, he took a loss of 41 cents a share and was glad he sold. The stock dropped to E, bottoming at 62.35 for a potential giveback from the high (D) of 28%. Instead of making 73%, he took a small loss.

Notice that this diving board pattern formed a lower plunge at B1. Rich took the trade anyway and paid the price.

26
Double Bottoms, Adam & Adam



RESULTS SNAPSHOT

Appearance: Twin bottom pattern with narrow V-shaped or spike bottoms.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	26 out of 39
Breakeven failure rate	16%
Average rise	39.4%
Volume trend	Downward
Throwbacks	67%
Percentage meeting price target	73%
See also	Double bottoms, Adam & Eve; Double bottoms, Eve & Adam; Double bottoms, Eve & Eve

This is the first of four chapters on double bottoms. Each chapter represents a different bottom shape (a variation described by Adam

and Eve designations). An Adam & Adam double bottom reminds me of a person on stilts: narrow legs, V-shaped, perhaps made of single spikes that touch the ground near the same price.

The Results Snapshot shows the important numbers. Adam & Adam double bottoms have slightly above-average breakeven failure rates and mediocre average rises. That places the performance rank in the bottom half of the list of chart patterns. Throwbacks occur in two out of three trades, so you may be able to add to your position or initiate a new one during a throwback.

Let's take a tour to see what the pattern looks like.

Tour

Figure 26.1 shows the first example of an Adam & Adam double bottom. Since we are looking at bottoms, the pattern forms at the end of a downward price trend and it acts as a reversal of that downtrend. The pattern can also appear in the corrective phase of a measured move up (price trends upward, forms the double bottom during a retrace, and then continues trending upward).

Notice the twin spikes (bottoms) that happen so often in this pattern. They drop well below the surrounding price lows yet bottom near the same price level. If the bottoms are not single spikes, then they take on the shape of a narrow V. Eve bottoms, by contrast, are wide and rounded looking.

Price recovers between the two bottoms. The rise need not look rounded—many times it appears irregular. Volume is higher on the left bottom than on the right, as in this example. Thus, the volume trend recedes across the pattern.

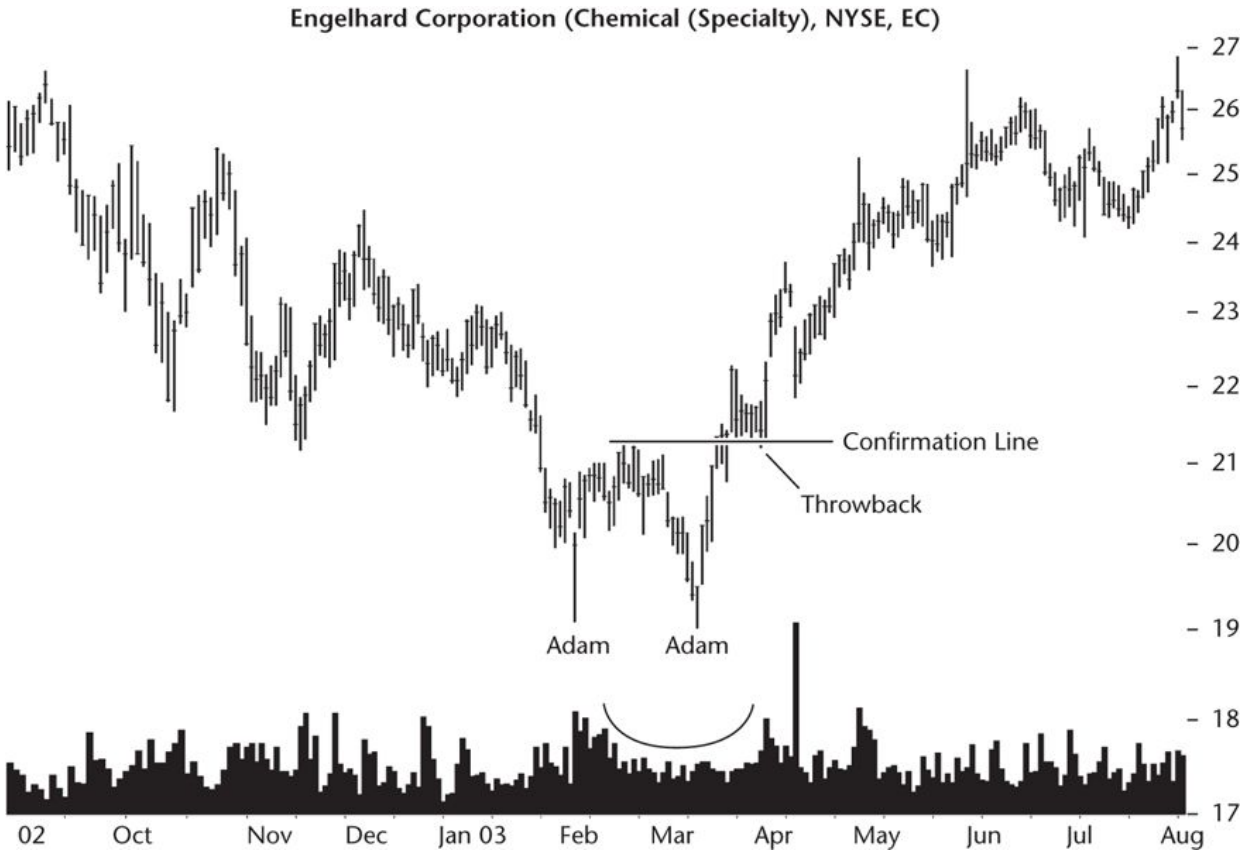


Figure 26.1 An Adam & Adam double bottom with twin spikes, volume heavier on the left bottom than the right, and U-shaped volume.

The confirmation line marks the highest high in the pattern. A twin bottom pattern is not a valid double bottom until price closes above the confirmation line. That occurrence signals a breakout and time to take a position in the stock. But before you do, check the identification guidelines to be sure you have a good pattern.

Identification Guidelines

Table 26.1 shows guidelines for identifying Adam & Adam double bottoms.

Appearance. The shape of each bottom should appear similar. That means both bottoms should look narrow, V-shaped, perhaps with a long, downward price spike or tail. To gauge the width, look at the *top* of the bottom. I know that sounds confusing, but the top end of the valley will tend to remain narrower than Eve bottoms along their height. (Eve bottoms, by contrast, will appear more rounded and wider than will their Adam counterparts).

When judging bottom shape, ask yourself if the two bottoms look the same or different. If they look the same, then you have either Adam & Adam or Eve & Eve bottoms. Narrow bottoms signify the Adam variety and wide bottoms signify the Eve variety.

Price trend. Look for price trending downward into the start of the chart pattern. Thus, the double bottom acts as a reversal of the downward price trend. How long should the inbound trend be? As measured from the trend start (see Glossary “Trend start” for definition), intermediate to long-term trends perform best. That's a trend longer than 3 months.

Table 26.1 Identification Guidelines

Characteristic	Discussion
Appearance	The two bottoms in this pattern should look similar, both narrow and V-shaped, perhaps one-day price spikes. Both should bottom near the same price.
Price trend	Price trends downward leading to the double bottom and should not drift below the left bottom.
Rise between bottoms	Some set a minimum rise of 10% from the lowest valley to the highest peak between the two bottoms, but be flexible. Taller patterns perform better.
Bottom low price	Bottom-to-bottom price variation is small. The median variation is 1%.
Bottom separation	Bottoms should be at least a few weeks apart, but I set no minimum or maximum duration for the pattern.
Volume	Usually higher on the left bottom than the right, so volume trends downward most often. Do not discard a chart pattern because volume has an unusual trend.
Breakout direction, confirmation	Upward, by definition. A breakout occurs when price closes above the highest peak between the two bottoms. A breakout confirms the pattern as valid.

Rise between bottoms. In the past, traders used to look for a rise between the two bottoms of more than 10%, as measured from the lowest bottom low to the highest high between the two bottoms. That's an arbitrary value. I don't pay much attention to a minimum height except to say that taller patterns perform better than short ones.

For example, consider **Figure 26.2**, which shows a valid Adam & Adam double bottom (center pattern) and a potential one (upper left at ABC). The center Adam & Adam pattern has two narrow, V-shaped bottoms and volume that is higher on the left side than on the right.

Twin bottom AB (upper left of chart) does not have Adam-shaped bottoms. The bottom at B is wider and more rounded looking than what we expect to see in an Adam & Adam pattern. So this potential double bottom is an Adam & Eve pattern or perhaps an Eve & Eve.

The rise to C is just 4%. That's fine but well below the 10% (or higher) I like to see.

Bottom low price. From the lowest low on the left bottom to the low on the right, the price variation should be small. For example, do not try to assign double bottom status to the right bottom of the Adam & Adam in October and point D in Figure 26.2. Point D does not drop close enough to the right bottom to qualify it as a valid bottom.

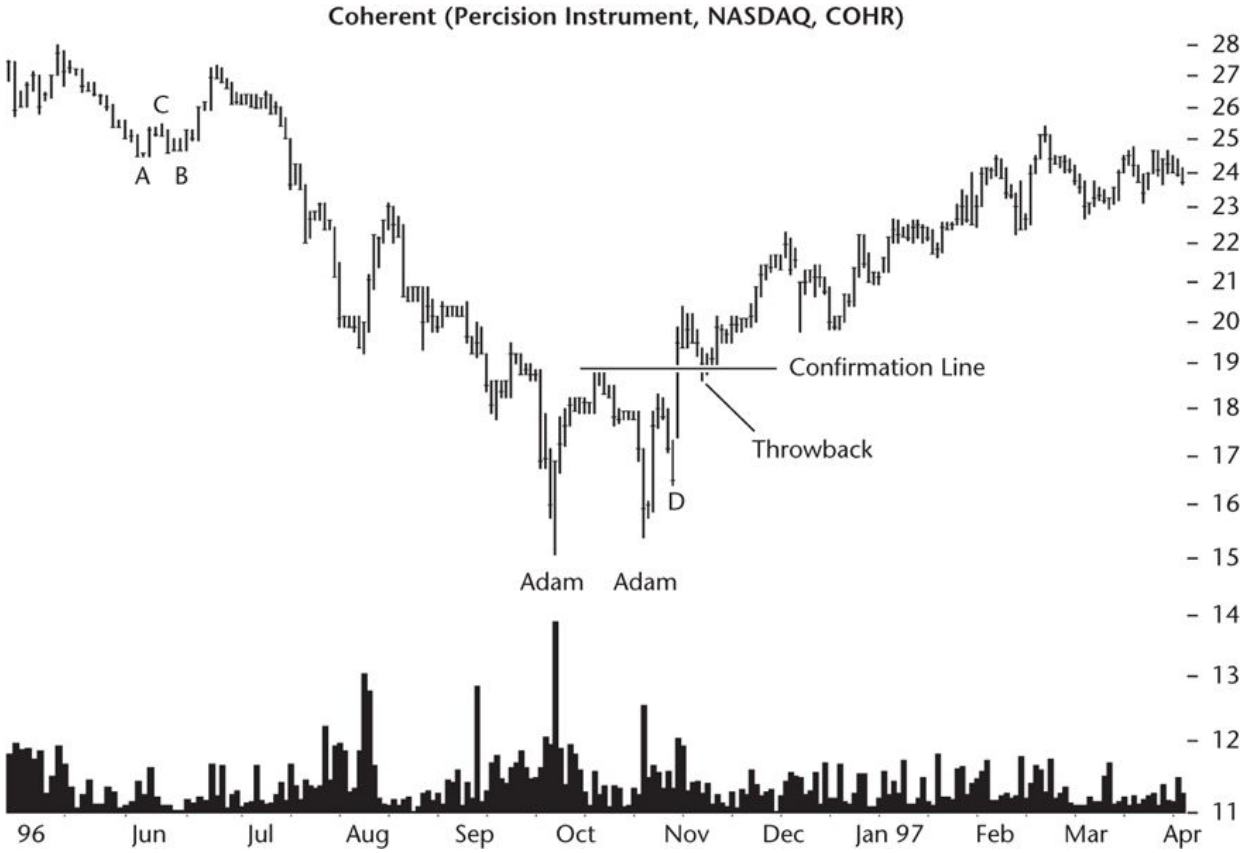


Figure 26.2 An Adam & Adam double bottom with a throwback. Pattern AB (upper left) is a small double bottom, but not Adam & Adam.

The median variation between bottoms was just 1%.

Bottom separation. How far apart should the bottoms be? Some texts say that bottoms must be at least a month apart, but I set no such limit. The median in my database was 16 days wide (from bottom to bottom).

Volume. The left bottom usually shows higher volume than the right one. However, volume higher on the right side should not exclude the pattern from consideration. Figures 26.1 and 26.2 show volume higher on the left bottom than on the right one.

Breakout direction, confirmation. The breakout from a double bottom is always upward. If price does not close above the highest peak between the two bottoms, then you don't have a double bottom.

A twin bottom pattern is not a valid double bottom until price closes above the high between the two bottoms. Always wait for confirmation before taking a position in a stock because price continues down 48% of the time.

Figure 26.3 shows two examples of Adam & Adam double bottoms. Are they valid double bottoms or just twin valley patterns? In both cases, the price trend leading to the patterns is downward, as required (so they are bottoms and not tops).

The bottoms are pointed with one-day spikes. All bottoms are V shaped, not wide, rounded turns. The rise to the confirmation line (that is, the pattern's height) is 24% for the August bottom and 17% for the October pattern.

Figure 26.3 Shown are two Adam & Adam double bottoms. The horizontal lines are the confirmation lines. A close above the line means the pattern is a true Adam & Adam double bottom.

The price at each bottom is close enough to each other that they look like bottoms, not steps. The time between the twin bottoms is 3 weeks for the August example and 2 weeks for the October bottom. Price rises to the confirmation point (shown as a horizontal line) in a snappy manner, closing above the highest high in just a few days (but this isn't a prerequisite).

The volume pattern is unexciting, including the breakout volume. In both examples, volume is higher on the left bottom than on the right, so the volume trend is downward. That's typical. Breakout volume is slightly above the 30-day average, classifying the breakout as having heavy volume. Thus, both patterns shown in Figure 26.3 are valid double bottoms. However, price rises just 18% and 16% after the breakout. How can we tell the outperformers from the also-rans?

Focus on Failures

Figure 26.4 shows the first double bottom failure and it is typical. The Adam & Adam pattern has valleys that form after a short-term downward price trend and bottom near the same price. The valleys are 29 days apart, with a 17% rise between them. The pattern's squiggles confirm when price rises above the confirmation line. That's when it stages a breakout and the squiggles become a valid Adam & Adam double bottom.

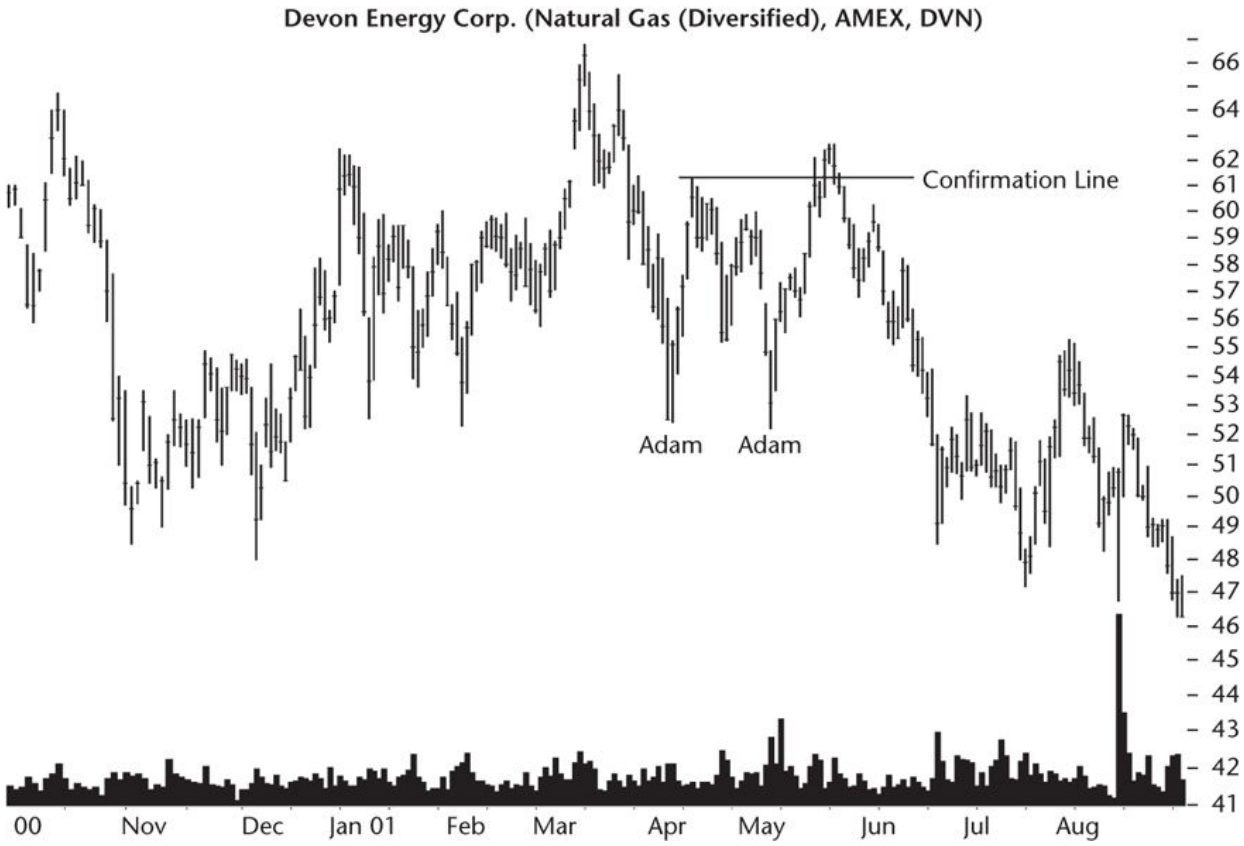


Figure 26.4 An Adam & Adam double bottom confirmed when price closed above the confirmation line, but price soon stalled. Overhead resistance (not shown) may have played a part, but other stocks in the industry were showing topping patterns.

Price climbs just 2% after the breakout. Why? The first clue is that the pattern is in a bear market, which is never good for bullish chart patterns.

The second clue is that there's not much of a downtrend to reverse. The downward price trend starts at the March peak (the highest on

the chart), so it is not far above the confirmation line. In other words, the double bottom did not act as a reversal of the longer-term prevailing price trend, but as a consolidation.

If you extended the figure to the left, you would see a long line of peaks stretching to May 2000. That line represented a massive zone of overhead resistance that the double bottom could not penetrate. A check of other stocks in the diversified natural gas industry showed that most of them were peaking in May or June. They all started tumbling at the same time. They showed topping patterns that predominated (double tops and triple tops), signaling a downward price trend. Thus, a smart investor would have not taken this trade.

Figure 26.5 shows an example of a second type of failure that perhaps you have seen. Here's how Ted traded it.

Ted is a novice investor with an attitude. He looks at the stock chart, checks the identification guidelines, and believes that the stock is making a double bottom. When price rises after the second bottom, Ted decides to pull the trigger early and buys the stock, receiving a fill at 42.63. He reasons that all the indications suggest the stock has completed a valid double bottom, so why not buy now?

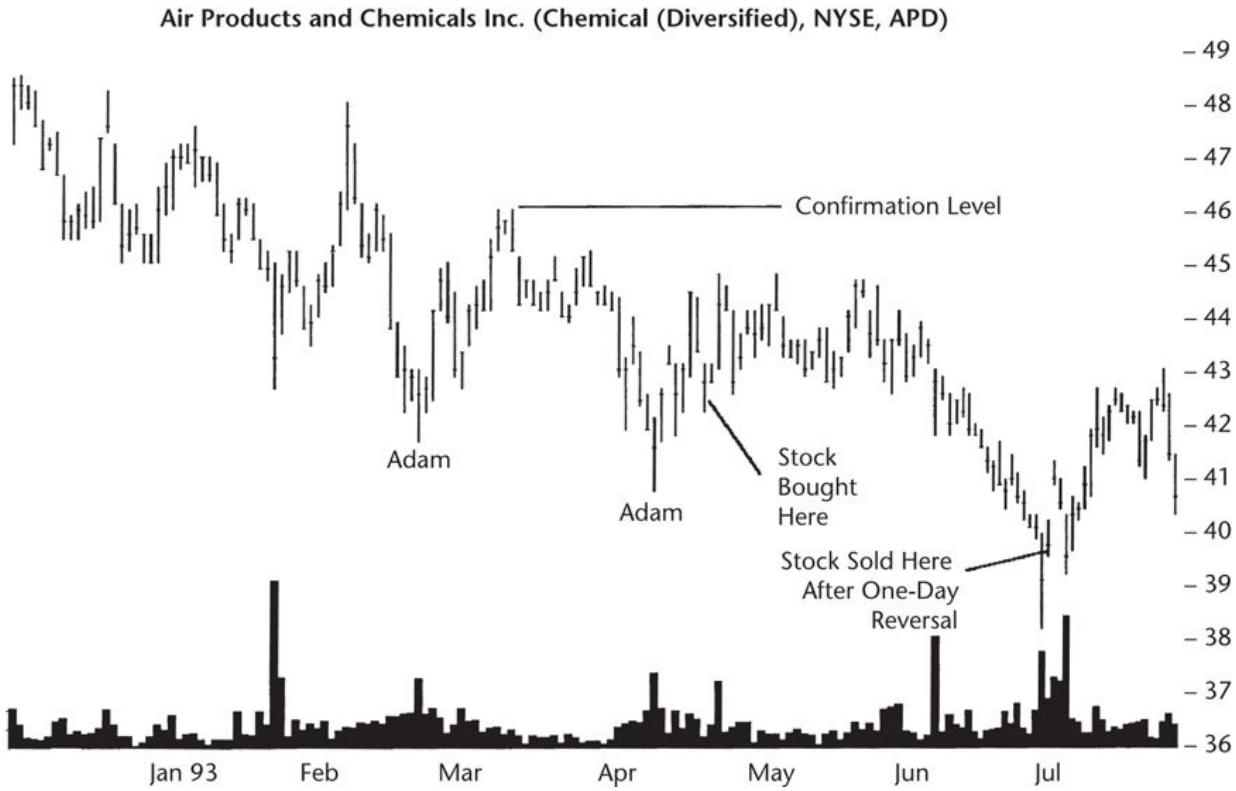


Figure 26.5 Example of second type of failure—failing to wait for breakout confirmation. Ted decided to get an early start on the double bottom but lost money.

Ted makes a good point. He is pleased with the stock's performance until it begins to round over. Does he sell out now at a small profit, or should he hold on and risk a downturn while waiting for additional gains? This is a recurring dilemma for traders.

He decides to hang onto his position. During May, the stock surges upward again before beginning a downhill run. Ted watches in horror as his profit vanishes and losses mount. Eventually, when price spikes downward, he sells at the opening the next day and closes out his position.

What did he do wrong? He failed to wait for confirmation. Price must close above the confirmation point (above the peak between the two bottoms) before a trade is placed. Otherwise your chances of success are diminished (48% fail to confirm, actually).

Statistics

Table 26.2 shows general statistics.

Number found. I found 1,295 patterns in 662 stocks starting from the first one in August 1991 and the most recent one in February 2020, but not all stocks covered the entire period and some no longer trade. Bear market samples were removed from the tally because they were too few to include here.

Reversal (R), continuation (C) occurrence. The Adam & Adam pattern is a bottom and not a top. Thus, price enters the pattern going down and breaks out upward, so it acts as a reversal of the downward price trend by definition.

Average rise. The average rise is shown in the table. It's below the 42.4% average for all chart patterns.

Standard & Poor's 500 change. The S&P 500 index climbed and helped push individual stocks higher. I measured the rise in the index from the date of the double bottom's breakout to the ultimate high. Even with the general market helping push the stocks higher, the chart pattern still underperformed other chart patterns.

Table 26.2 General Statistics

Description	Bull Market
Number found	1,154
Reversal (R), continuation (C) occurrence	100% R
Average rise	39.4%
Standard & Poor's 500 change	12%
Days to ultimate high	208
How many change trend?	52%

Days to ultimate high. The pattern takes 7 months to reach the ultimate high, on average. Every trade is different, but it suggests traders need to be patient as price rises over the long term. However, the median is just 73 days (the difference is because some patterns just trend up and up and don't reach the ultimate high for years). Whether it takes 2 months or 7, ride the stock as long as you can before it bucks you off.

How many change trend? This is a count of how many patterns see price rise more than 20% after the breakout. I like to see values over 50%, and double bottoms qualify. Even so, the average for chart patterns is 55%, so Adam & Adam patterns are a bit shy of the mark.

Table 26.3 shows that double bottoms have a 5% failure rate that is above the average (meaning worse) of other chart pattern types. I show a list of failure rates in the table. For example, 16% of the patterns in bull markets fail to see price rise more than 5% after the breakout. Almost a third (31%) rise less than 10%. Notice how the failures get worse as you scan down the rows. However, the increase from row to row isn't as steep as we've seen in other chart patterns (except for the move from 5% to 10% where failures almost double).

Another use of Table 26.3 is to check on the measure rule prediction discussed in the Trading Tactics section later. Suppose the rule predicts a move from 10 to 13. That is a 30% rise. How many patterns will see price rise more than that? Answer: 38% (62%, on average, will fail to make it that far). Thus, it appears that a 30% target is too far away, but you could get lucky.

Table 26.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is upward when price closes above the highest peak between the two bottoms. All double bottoms have upward breakouts; otherwise they are not valid patterns.

Table 26.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market
5 (breakeven)	189 or 16%
10	163 or 31%
15	107 or 40%
20	97 or 48%
25	85 or 56%
30	69 or 62%
35	61 or 67%
50	112 or 77%
75	110 or 86%
Over 75	161 or 100%

Table 26.4 Breakout and Post-Breakout Statistics

Description	Bull Market
Breakout direction	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 45%, M 41%, H 32%
Throwbacks occurrence	67%
Average time to throwback peaks	6% in 7 days
Average time to throwback ends	12 days
Average rise for patterns with throwbacks	38%
Average rise for patterns without throwbacks	42%
Percentage price resumes trend	72%
Performance with breakout day gap	40%
Performance without breakout day gap	39%
Average gap size	$0.55

Yearly position, performance. I sorted the double bottom's breakout price into where it occurred in the yearly price range. The

best performing patterns have breakouts within a third of the yearly low. Avoid trading those near the yearly high. That suggests a bottom-fishing strategy (buy low, sell high) would work well with double bottoms and not a momentum play (buy high, sell higher).

Throwbacks. A throwback occurs in two of every three trades. That is a high return rate. Thus, if you missed investing in a double bottom, you may have another opportunity if it throws back.

The average round-trip return time to complete a throwback is 12 days, which is typical for chart patterns. Notice that when a double bottom throws back, performance suffers. To avoid a throwback, look for nearby overhead resistance. The good news is if price does throw back, it resumes the upward trend 72% of the time.

Gaps. Breakout day gaps help performance but not by a huge amount.

Table 26.5 shows statistics related to size.

Height. Do tall patterns perform better than short ones? Yes. To use this finding, measure the height from the highest peak to the lowest bottom in the pattern and then divide by the price of the highest peak. Compare the result with the median shown in the table. A value higher than the median means you have a tall pattern. Lower than the median and you have a short one.

Trade only tall patterns for the best performance. For the Adam & Adam pattern, the performance difference between short and tall is especially wide, so height is something you'll want to pay attention to.

Width. Wide patterns outperform narrow ones by a substantial amount, so select wide patterns. I used the median length as the separator between narrow and wide.

Height and width combinations. We've seen that tall patterns do especially well and wide patterns do well, too. Does the combination tall and wide also outperform? No! Tall and narrow shows a minor performance improvement over tall and wide. The numbers suggest you avoid short patterns, either narrow or wide.

Table 26.6 shows volume-related statistics.

Volume trend. Volume trends downward in almost two of three cases. Does performance change depending on the up or down

volume trend?

Table 26.5 Size Statistics

Description	Bull Market
Tall pattern performance	49%
Short pattern performance	30%
Median height as a percentage of breakout price	9.4%
Narrow pattern performance	35%
Wide pattern performance	44%
Median width	16 days
Short and narrow performance	30%
Short and wide performance	29%
Tall and wide performance	49%
Tall and narrow performance	50%

Table 26.6 Volume Statistics

Description	Bull Market
Volume trend	64% down
Rising volume trend performance	39%
Falling volume trend performance	39%
Heavy breakout volume performance	37%
Light breakout volume performance	42%

Rising/Falling volume. Answer: No. I didn't see any performance difference between the two trends.

Breakout day volume. Often heavy breakout day volume suggests better performance, but not for this chart pattern. The performance difference between heavy and light volume is high enough that maybe you should pay attention to trading breakouts that have below the 30-day average volume.

Table 26.7 shows how often price reaches a stop location. I split the pattern in half on the price scale and checked how often price reached

three areas on the way to the ultimate high.

If you placed a stop-loss order at the top of the pattern, price would stop you out 76% of the time. Move the stop to the bottom of the pattern, and the stop will hit just 3% of the time. Unfortunately, you'll take a bigger loss than if the stop is at the pattern's top. Regardless of where you place your stop, compute the potential loss as a percentage of the current price to see if you can tolerate or afford such a loss.

Table 26.8 shows the performance over three decades.

Performance over time. The roaring 2000s showed huge average gains (60%). The numbers do not include the two bear markets during the decade. The worst performance comes from the 2010s. That decade has almost half the performance rate seen in the 2000s (34% versus 60%).

Failures over time. Failures have been rising, almost doubling each decade. That's a scary thought, so maybe this is a statistic you shouldn't share with your children.

Table 26.7 How Often Stops Hit

Description	Bull Market
Pattern top	76%
Middle	22%
Pattern bottom	3%

Table 26.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	47%
2000s	60%
2010s	34%
Performance (above), Failures (below)	
1990s	6%
2000s	10%
2010s	20%

Table 26.9 Busted Patterns

Description	Bull Market
Busted patterns count	329 or 29%
Single bust count	180 or 55%
Double bust count	97 or 29%
Triple+ bust count	52 or 16%
Performance for all busted patterns	–17%
Single busted performance	–27%
Non-busted performance (Adam & Adam double top)	–15%

Table 26.9 shows busted pattern performance.

Busted patterns count. Over a quarter of patterns bust. That means price rises 10% or less before reversing and closing below the bottom of the chart pattern.

Busted occurrence. I counted how often a pattern busts (once, twice, or more than twice) and show the numbers in the table. Most are single busted patterns.

Busted and non-busted performance. I used the performance of Adam & Adam double *tops* as a proxy for a non-busted Adam & Adam double *bottom*. The busted performance, either for single busted patterns or the combination of single, double, and triple+, is better than non-busted patterns.

Trading Tactics

Table 26.10 shows trading tactics.

Measure rule, targets. Use the measure rule to compute a target price. The rule gives you a suggestion—an idea—of how far price might rise after the breakout. It's not a guarantee, and we'll talk about numbers in the moment.

To find the target, subtract the lowest low in whichever bottom is lower from the highest high between the two bottoms. Add the difference to the highest high. The result is the target price.

For example, look at Figure 26.6. The highest high is at 20 (the breakout price or confirmation line), and the right bottom is lower at 15.50. Add the difference, 4.50, to the highest high to get the target, or 24.50.

The bottom portion of the table shows how often price reaches the target. In this example, we used the full height of the pattern in the measure rule. That method works 73% of the time on average. Cut the height in half and you get a closer target but less potential profit. Double the height in the computation and the success rate drops to 53%, but you could earn more.

Table 26.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height from the highest high between the two bottoms to the lower of the two bottoms, then add the height to the highest high between the two bottoms. The result is the target price. The bottom portion of this table shows how often the measure rule works.
Wait for breakout	Always wait for confirmation (a close above the highest high).
Trade with market trend	To improve your odds of success, trade this bullish pattern in bull markets and a bullish industry.
Check others in the industry	Check others in the industry. If they are bullish, then the double bottom has a better chance of working well.
Stop location	See Table 26.7 for stop location guidance.
Busted trade	If you can afford the risk, a busted double bottom is a bearish signal.

Description	Bull Market
Percentage reaching half height target	88%
Percentage reaching full height target	73%
Percentage reaching 2× height	53%
Percentage reaching 3× height	40%

Once you have a target, visit the discussion of Table 26.3 to evaluate your chances of success.

Wait for breakout. Since double bottoms act as reversals of the prevailing price trend, there is a 48% chance (I measured this in a 2018 study on the best entry) that price will continue declining instead of confirming the double bottom. That is why you should wait

for a breakout (a close above the confirmation line, which is the price of the highest high between the two bottoms). Buying before the breakout is an easy way to lose money, but if you're right, you could make more.

In my trading, I place a buy stop a penny above the top of the chart pattern to enter a trade. That means I'm not waiting for a close above the pattern (and entering the next day at the open), but statistical results show the failure rate drops and the median rise increases (slightly) with this method.

Trade with market trend. You'll make the most money if you trade in line with the market and industry trends. If the general market is bullish, then go long. If it's bearish, then don't add a long position until the bear market is nearing its end (like 1.5 years after it started).

Check others in the industry. What are other stocks in the same industry doing? If they are showing signs of bottoming, then the double bottom becomes more important. If other stocks are continuing down, avoid trading the double bottom. Chances are the stock will fail to perform as expected.

Table 26.11 Special Features

Trading Tactic	Performance
Small bottom-to-bottom variation	31%
Large variation	49%
Median bottom-to-bottom variation	1%
Lower left bottom	39%
Lower right bottom	41%

Stop location. Use Table 26.7 to assess the probability of a stop being hit. Swing traders will want to use a stop on most trades, but buy-and-hold investors will want to avoid them.

Busted trade. Table 26.9 shows that busted double bottoms work better than non-busted double tops. A busted double bottom provides an easy entry signal for a short sale.

Table 26.11 shows special features of double bottoms.

Bottom to bottom variation. I measured the bottom-to-bottom price variation and found that it was smaller than I expected: 1%. I sorted performance of Adam & Adam double bottoms by whether price showed a smaller or larger variation. The table shows when the bottom-to-bottom price difference had a variation greater than the median, performance improved significantly. I don't know why this might be. I can understand if the right bottom is above the left, then that would indicate buying enthusiasm. The problem is, it doesn't work. Why? The number item explains.

Lower bottom. I checked performance depending on which bottom was lower. There's not a big performance difference as the table shows, but since you have a choice in the double bottoms you pick to trade, look for ones with a bottom on the right lower than the one on the left.

Experience

Let me share some of my experience with the Adam twins to see what lessons I can pass on.

KB Home Corp.

KB Home Corp (KBH) in 2010 made an Adam & Adam double bottom which confirmed. On 2 August, I bought. Upside target was 16 and then 20 (versus a buy price of 11.65), so the target was far away. Stop location was 9.91, which was closer than the volatility stop of 9.68 and below round number 10 (support area). From my notebook: “Weekly scale (industry, too): weak with many stocks making bottoms. The housing industry seems poised to make a turn upward here. Bad news: The stock's relative strength against the S&P 500 is FALLING. Buy reason: Confirmed double bottom with a straight-line run down. I expect this to V bottom and make a beeline run back up. But if the market tanks, then sell below support at 9.91. Do NOT ride it down.”

I didn't use a buy stop a penny above confirmation (optimum entry). Instead, I bought after the throwback completed and the stock started moving back up (second-best entry option).

Over the next week, the stock went down for 3 days and then recovered. After that, it just went down.

“Sell reason: The stock has broken through support at the double bottom low, and it's going down. Time to sell. This could be a broadening bottom forming, but my guess is the stock will not bounce off the lower TL [trendline; it sliced through it but recovered], which is what I hoped would happen today. The market has been down 3 days in a row, and I expect it to bounce back, but things seem to be getting worse this morning. I'm just going to sell this turkey. Filled at 9.5701. A hard stop just above 10 would have improved results, but 10 is a round number. I can never make money trading these housing stocks…Existing home sales were much weaker than expected, but the stock opened lower, dipped, and then climbed to close higher. Sigh. Today (25 August), new home sales will be announced, and they are expected to be weak. Maybe that will take the stock down.”

I sold the day the stock bottomed. It moved up in a choppy manner until reaching the ultimate high at 16.11 (short of the 20 target) in

January 2011. This double bottom double busted, taking 17% from me. That's double what I like to see.

- Lesson: A buy stop placed a penny above the top of the chart pattern would have lowered the entry price.
- Lesson: Keep losses small. A hard stop (one placed with the broker) a penny or two below the lower of the two lows would have limited losses.

Charles Schwab Corp.

A trade in Charles Schwab Corp. (SCHW) didn't work out, either. “21 November 2002. I bought at market, filled at 11.72. This is an AADB trade [Adam & Adam double bottom] with a +1 score. Merrill upgraded the stock, and it broke out, paused at overhead resistance at 11.50. I expect a climb to 12–13 where it'll meet resistance and pause [it paused at 12 and again at 12.50 in a second peak]. With effort, it'll push through this and move higher as the bull market comes back. Downside is a drop to 9, the bottom of a support range (9–10). [Head-and-shoulders top] neckline is at 8.50, so that may also add support. Median rise is 12.49, and I hope it'll beat that. I now expect a retest of the breakout, but we'll have to see. Other brokerage stocks are struggling.”

The double bottom formed a head-and-shoulders top as a new pattern between the two bottoms. The neckline of that pattern was at 8.50.

After I bought, the stock made a symmetrical triangle with an upward breakout. That looked promising, but the stock reversed and headed lower. Here's the sale: “21 January 2003. I sold today because the stock has dropped through triangle apex support on a poor earnings announcement. Filled at 10.90 for a loss of 7%. Reason for sale: The symmetrical triangle didn't perform as expected, so it was time to get out.”

Again, I was late buying into the stock, which cost me. The stock continued down to 6.25, a drop of 43% below where I sold. Fortunately, I sold promptly and kept the loss reasonable, at 7%.

- Lesson: Beware of earnings announcements. This one chopped the stock price almost in half. Even people who buy-and-hold

should pay attention to earnings and earnings warnings. Often selling immediately is the correct choice.

Southwest Airlines

In late February 2002, Southwest Airlines (LUV) stock peaked at 22 and slid all the way down to 10.90 where it formed the first bottom of an Adam & Adam double bottom. The second bottom appeared about a month later, in mid-August. Two days after it bottomed, before confirmation, I was in there buying, trying to pull back on the stick to keep the airline from hitting ground. “16 August 2002. I bought at market open, filled at 12.45. I think this has bottomed even though UAL [United Airlines] might go bankrupt. It appears that this might be an Adam & Adam double bottom, providing prices climb above confirmation. That might be tough in the short term as the market is nervous and airlines are the pits. I'll buy more if this descends to 11 or so, maybe in Nov, then pray for a rise into the spring as airlines usually take off over that time.”

Much to my surprise, the stock climbed and confirmed the double bottom. Yippee!

The stock threw back to the breakout price, as one might expect (they happen 67% of the time), except this one kept going down. And down. It bottomed at 11.23, or 27% below the high price (15.30) reached just before the throwback.

After the stock bottomed, it looked like a triple bottom, which saw the stock recover and confirm, too.

The stock bounced up and down around the triple bottom's confirmation price. On 14 November 2002, I wrote, “I'm going to sell my shares at market open. CCI [commodity channel index] shows negative divergence and that's the key issue. Other airline stocks are bumping against overhead resistance, so I expect a decline. Although it's November, a good holding period, I think a short-term decline from a budding AADT [Adam & Adam double top] is in order. We could drop to 13, maybe 12. Then buy it back. For now, take the money and run.”

I sold at 15 and made 20% on the trade, including a small dividend. If I had stayed in the trade for 2 more weeks, I could have sold at the

ultimate high of 16.70. After that, the stock tumbled by 30%.

- Lesson: Wait for the breakout; otherwise you risk losing 48% of the time. In this case, buying early worked well.
- Lesson: If it was a swing trade (it wasn't supposed to be), having a defined exit price of 15 would have cashed me out in about a week (when the stock peaked at 15.30).
- Lesson: I no longer use indicators. This took me out of the trade too soon, but at least I didn't ride the stock back down.

Sample Trade

Randy traded the stock shown in Figure 26.6 and made a tidy sum of money. Let me tell you how he did it. First he qualified the pattern as a true double bottom by reviewing the identification characteristics listed in Table 26.1. Briefly, the stock started down in early January after a long-term uptrend that began in February 1995 (not shown).

The twin bottoms were narrow with one-day downward spikes. The rise between bottoms measured 29%; the bottom lows were 1% apart in price and separated by 64 days. Oddly, the right bottom showed higher volume, making for an upward volume trend.

“I placed an order to buy the stock at the confirmation price, and it filled at 20.”

The stock struggled by moving sideways for a week, then achieved liftoff. Price climbed until early June when it started retracing. The retrace turned into a throwback when price pierced the confirmation line at 20. “I expected a throwback, but nobody expects the Spanish inquisition. That's from Monty Python.”

Price moved up again and retraced, forming the handle of a cup-with-handle pattern. “I got cute. I drew a down-sloping trendline along the handle, and the day after price closed above the trendline, I bought more at 22.73.”

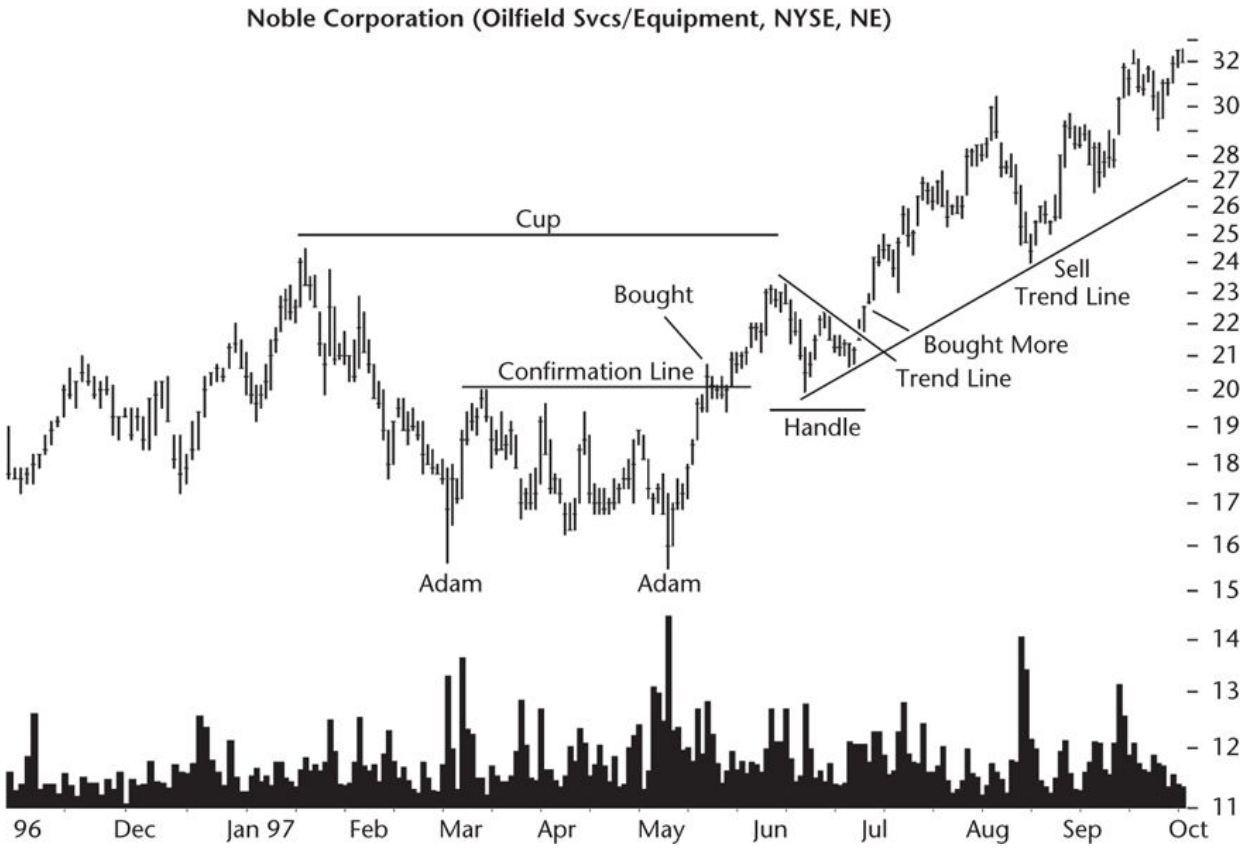
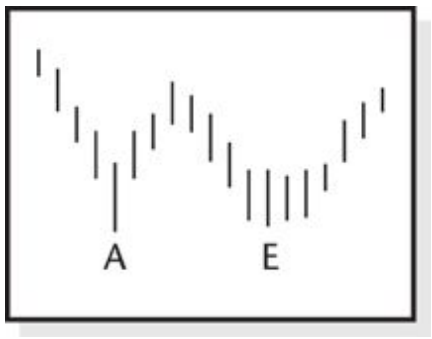


Figure 26.6 Randy traded this Adam & Adam double bottom, buying at the confirmation price, buying again when price closed above the cup-with-handle trendline, and selling when price closed below the long, up-sloping sell trendline.

He computed the target price for the double bottom (24.50, see the "Measure rule" in Table 26.10) and smiled when price passed that, moving up. Then, he drew an up-sloping trendline following the contours of the handle (called the "Sell Trendline" in Figure 26.6).

"I vowed to sell the day after price closed below the trendline, which it did in late November [not shown], at 32." That was down considerably from the high at 38.19, but he made 60% on his first trade and 41% on the cup-with-handle trade.

27
Double Bottoms, Adam & Eve



RESULTS SNAPSHOT

Appearance: Twin valley pattern with one narrow and one wide-looking bottom.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	17 out of 39
Breakeven failure rate	12%
Average rise	42.9%
Volume trend	Downward
Throwbacks	67%
Percentage meeting price target	69%
See also	Double bottoms, Adam & Adam; Double bottoms, Eve & Adam; Double bottoms, Eve & Eve

The Adam & Eve chart pattern is a variation of the double bottom. The Adam bottom looks narrow and V-shaped, perhaps with a large

downward price spike. The Eve bottom is wide, rounded-looking, and sometimes has many short spikes like weeds sprouting in a lawn. The two bottoms should look different from one another.

Performance is similar across three of four combinations of Adam and Eve double bottoms with the exception, Eve & Eve showing superior performance. However, I treat each variation as a separate pattern just to be sure. The Results Snapshot shows the important performance numbers.

The average rise in bull markets is slightly above the average for all chart patterns (42.4%), placing the pattern's rank at 17 out of 39 where 1 is best. Throwbacks occur two-thirds of the time, but when they happen, performance suffers.

Let me give you a tour of this chart pattern.

Tour

Figure 27.1 shows an example of an Adam & Eve double bottom. It's not a good example, but it'll do. The Adam bottom seems to be an outlier in an otherwise straight-line run down to the Eve bottom. And Eve, on this aspect ratio (of width to height), looks V-shaped, too. On my computer screen, both look better than shown here. However, my reading glasses may need adjustment.

That, of course, brings up the first problem: How do you tell an Adam bottom from Eve? I programmed my computer to find them. It can differentiate between Adam and Eve consistently, not subjectively. I started to put the algorithm in the Glossary but gave up. It's too complicated to describe in words, and few readers will care anyway. Oftentimes you can look at a pattern and determine the Adam or Eve combination.

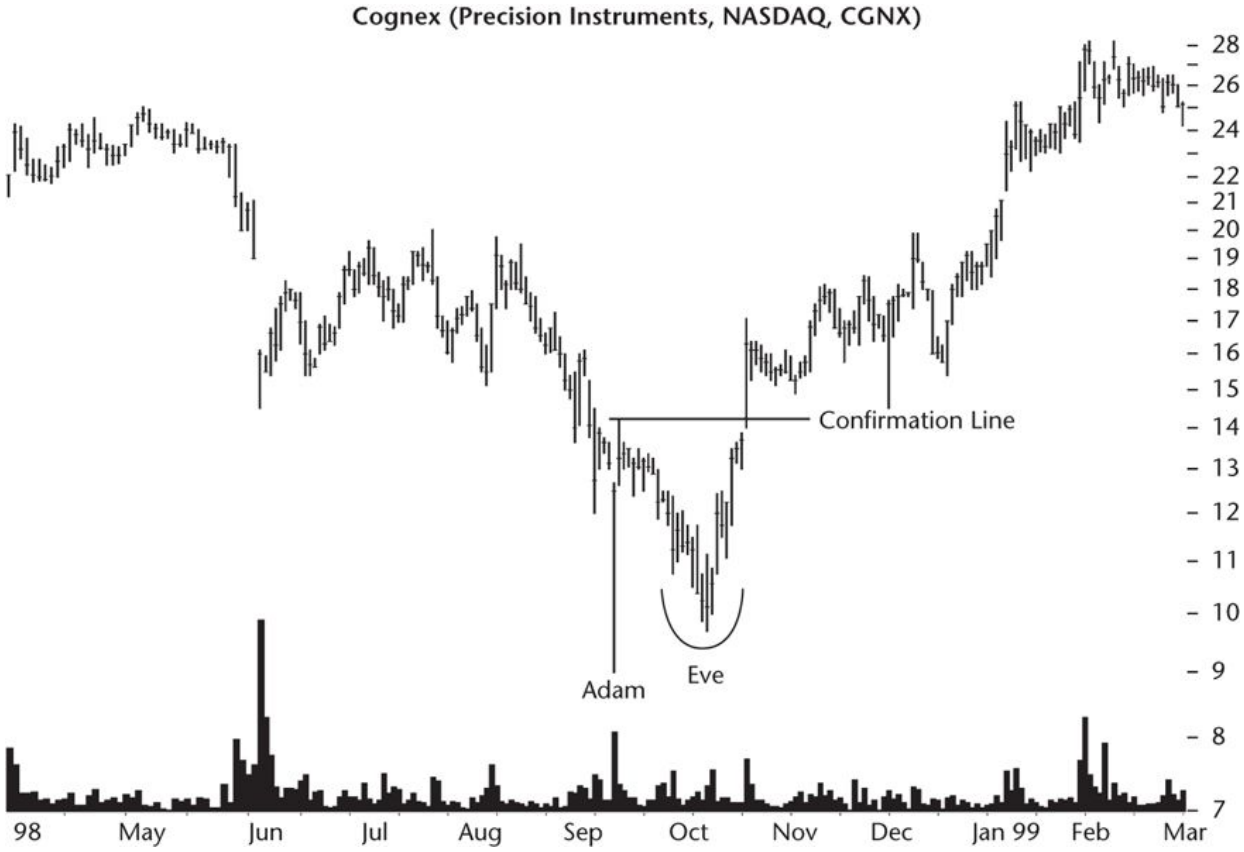


Figure 27.1 A tall one-day downward price spike is the Adam bottom, and the rounded turn marks the Eve bottom.

When I look at this figure, my eye goes to the vertical line above the Adam label. The line points to the gap. But that line is the price bar which created the area gap when price opened lower.

I checked two data sources to be sure I had good data for that price bar. The results are correct. The Adam & Eve double bottom appears after a long downward price trend in this example. The Adam bottom is narrow, a one-day price spike (in this example), but the Eve bottom is wider and composed of several short price spikes. Not only is this Adam bottom unusually long, but the price bottoms are uneven. More often, the price variation between the two bottoms is slight, which segues into the next section: Identification Guidelines.

Identification Guidelines

How do you identify an Adam & Eve double bottom? First, let us look at a few examples to get a better feel for what's involved. **Figure 27.2** shows a double bottom midway up a price trend that began in March 2003. I show this as an example of the double bottom acting as the corrective phase of a measured move up chart pattern. The double bottom allows price to regroup before renewing the attack on a new high.

Figure 27.2 This Adam & Eve double bottom appears as the corrective phase of a measured move up chart pattern.

The Adam bottom is a one-day downward price spike. The Eve bottom also has a spike, but it is shorter, and the nearby wide price congestion differentiates the Eve bottom from the narrower Adam bottom. The two bottoms look different: skinny and fat.

Figure 27.3 shows a better example of an Adam & Eve double bottom except this one is part of a longer-term downward price trend. Price reverses after the pattern ends by moving up for a few months

before easing back down. Again, the Adam bottom appears narrow, V-shaped, and the Eve bottom is wide and more rounded-looking. Eve typically has several short price spikes and Adam has few (usually one or two).

Table 27.1 lists identification guidelines, so huddle up. Let's discuss them.

Appearance. The two bottoms should appear different from each other. The left bottom, Adam, should be narrow, pointed, and V shaped, perhaps as a one-day downward price spike. The right bottom, Eve, should be wider and rounder, not V shaped.

Price trend. Since we are dealing with bottoms and not tops, look for the pattern to appear at the end of a downward price trend. The trend need not be very long as Figure 27.2 shows (with the June peak), but the classic situation is like that shown in Figure 27.3. Price declines for several weeks or months leading to the pattern.

Figure 27.3 This double bottom happens after a downward price trend. The pattern acts as a reversal.

Table 27.1 Identification Guidelines

Characteristic	Discussion
Appearance	Narrow, V-shaped, perhaps pointed-looking left bottom (Adam), sometimes composed of a long, one- or two-day price spike. The right (Eve) bottom appears rounded and wider.
Price trend	Price trends downward into the left bottom and should not drift below it.
Rise between bottoms	No minimum set, but tall patterns perform better than short ones. The median height is 12%, but be flexible.
Bottom low price	Bottom-to-bottom price variation is small. The median variation is 1%.
Bottom separation	Bottoms should be several days apart, preferably several weeks apart. The median width is 25 days.
Price rise after right bottom	Price must close above the confirmation point without forming a third bottom.
Volume	Usually higher on the left bottom than the right.
Breakout direction, confirmation	The breakout is upward when price closes above the highest peak between the two bottoms, confirming the pattern as a valid one. If it doesn't breakout upward, you don't have a valid double bottom.

Rise between bottoms. I removed the minimum price rise between bottoms of 10% because I prefer to let the double bottom pattern tell me how tall they should be. However, taller patterns perform better than do short ones, so keep that in mind as you search for a valid double bottom. The median height in the samples I looked at is just over 12%, probably because of the 10% minimum standard in patterns I used years ago.

Bottom low price. The two valleys should bottom near the same price. Figure 27.1 pushes the limit because the bottoms differ by 8%. Figure 27.3 is a better example as the bottoms are closer together.

Bottom separation. How far apart in time should the bottoms be? The median width is 25 days, measured from bottom to bottom. Wide patterns tend to outperform.

Price rise after right bottom. The rise from the right bottom to the confirmation price may be brief, but it usually takes a median of just under 2 weeks (13 days). If price makes a third bottom before confirmation, then you don't have a valid double bottom.

Volume. Most Adam & Eve double bottoms will show volume heavier on the left bottom than on the right. Do not exclude a pattern if it has volume higher on the right bottom.

Breakout direction. The breakout is always upward in a valid double bottom pattern. A breakout occurs when price *closes* above the highest peak between the two bottoms. It confirms the double bottom as a valid chart pattern. Only then should you consider buying the stock. I use the closing price in my statistics because it helps prevent premature breakouts.

Why do double bottoms form? To answer that question, consider the double bottom shown in **Figure 27.4**. After reaching a multiyear low in June, price recovered some of its losses by rising, leaving behind an Adam bottom.

A retrace of the downward move is common, with a retest of the low typically following. A retest is just like it sounds: Price returns to the low set earlier, and it tests to see if the stock can find support at that price level. If it cannot, price continues moving lower. Otherwise, the low becomes the end of the decline and the stock begins to recover.

Such was the case depicted in the figure. It's clear from the volume pattern that many investors believed the low, shown as point B, was a retest of point A. Volume surged on two occasions in the vain hope that the decline had ended. Investors were wrong.

Price held at 21 for a week before continuing down. As price headed toward the level of the June low (the Adam bottom), volume surged again. This surge marked the end of the downward plunge. Price hesitated at that level for slightly less than 2 weeks before turning around and heading up.

A double bottom is nothing more than a retest of the low. Investors buy the stock in the hope that the decline has finally ended.

Sometimes they are right and sometimes they are not, which leads us into the next section: failures.

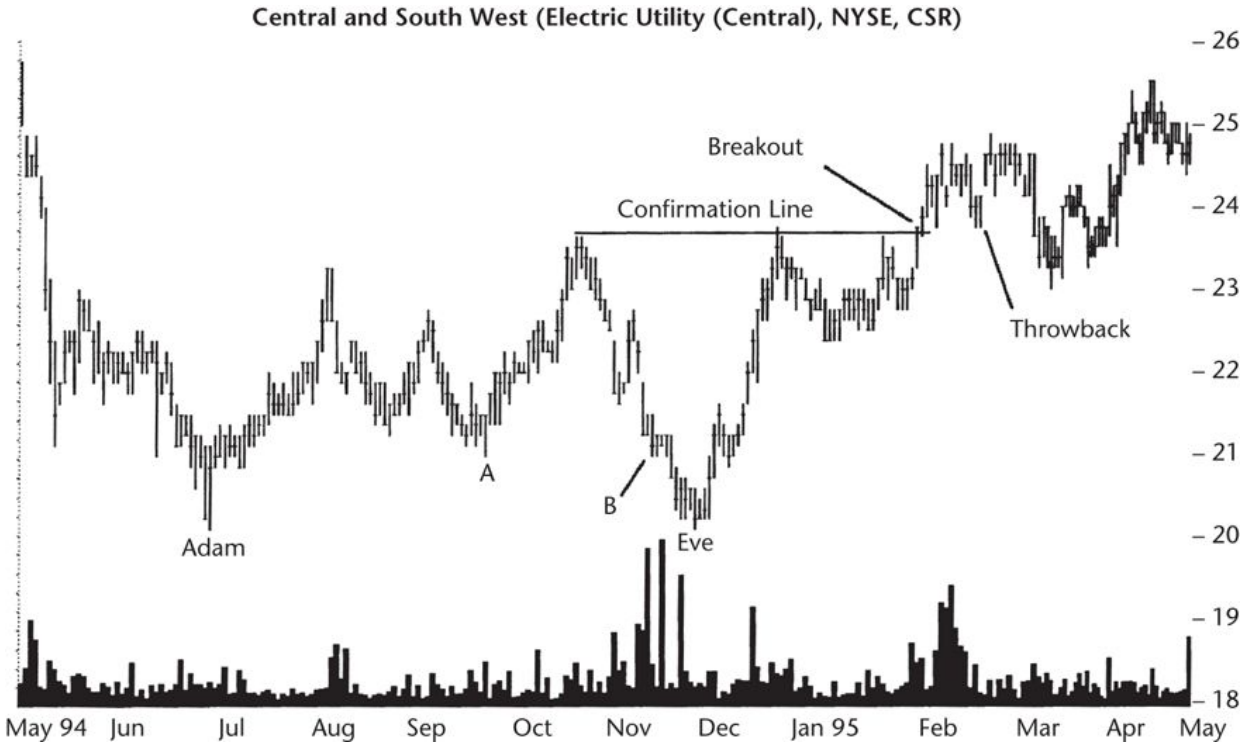


Figure 27.4 Price confirms the breakout once it closes above the confirmation point, shown here as the horizontal line. Price often throws back to this level after the breakout.

Focus on Failures

It is obvious that the pattern pictured in **Figure 27.5** is a valid double bottom. The first bottom occurs after a downward price trend, as you would expect. The two bottoms are far enough apart, the rise between them is sufficient to delineate two minor lows (valleys), and the price variation between the two bottoms is small. The volume pattern is unusual in that the second bottom has a higher, denser volume pattern than the first. However, this is not significant.

After the second bottom, price rises at a steady rate until the confirmation point. Then price jumps up and pierces the price of the prior minor high at about 40.63. When price *closes* above the confirmation line, it signals a breakout and swears the double bottom formation is a valid pattern.

In this case, as is common for many double bottoms, price throws back to the breakout price. However, this stock continues moving down. Scrolling Figure 27.5 to the left, you would see price making a new low in September 1993 at 31.63 (not shown), below the February low of 34.

Had you purchased this stock on the breakout and held on, you would have lost money. I call this type of failure a 5% failure. Price does not rise by more than 5% above the breakout price before heading lower. Five percent failures happen more often than I like to see (anything above zero is too high), but the failure rate for Adam & Eve patterns ranks 14 out of 39, where a value of 1 is best (fewest failures). That's not too bad.

Let's talk numbers to see how the average pattern performs in bull markets.

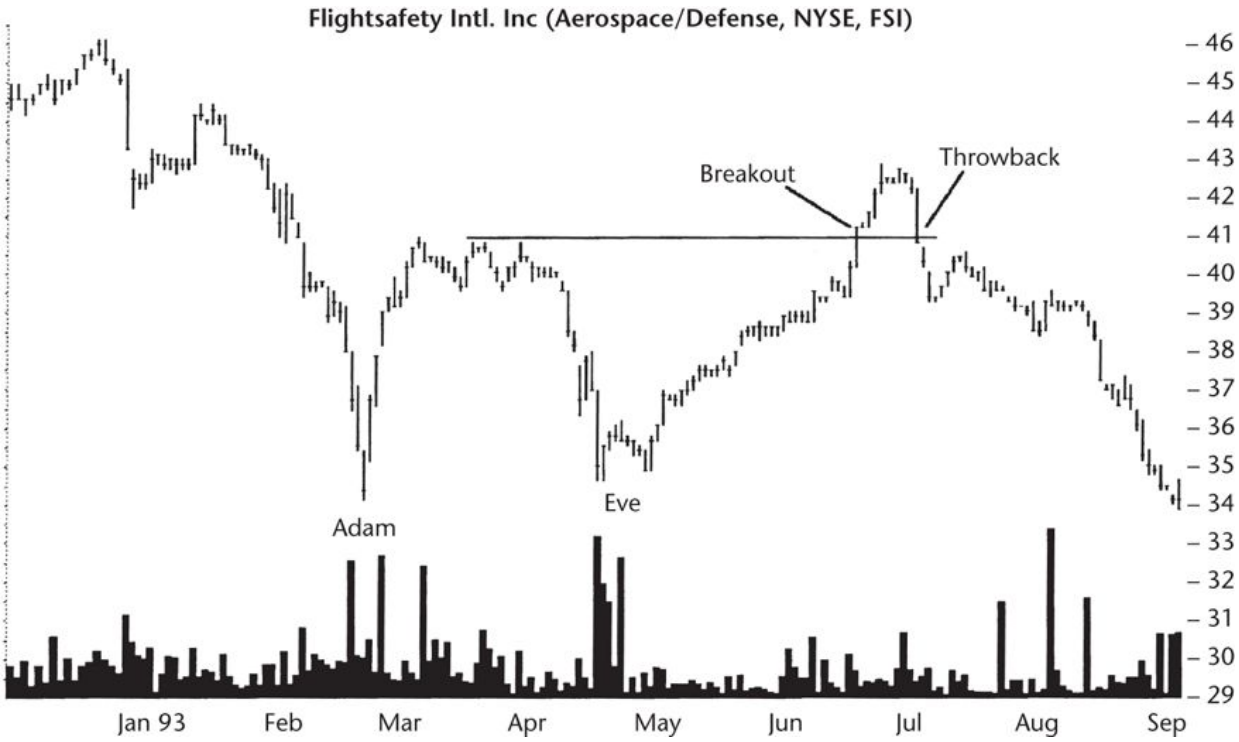


Figure 27.5 Example of a 5% failure. This type of failure occurs when price plummets after rising less than 5%.

Statistics

Table 27.2 shows general statistics.

Number found. I found 1,163 double bottoms in 680 stocks with the first one appearing in July 1991 and the most recent in February 2020. As many patterns as that sounds, there were not enough appearing in bear markets, so I removed them from the presentation. Not all stocks covered the entire range, and some have the audacity to no longer trade. Perhaps they're shy.

Reversal (R), continuation (C) occurrence. By definition, a double bottom acts as a reversal of the downward price trend when price breaks out upward from the pattern.

Average rise. The average rise is a smidgen above the average shown by all chart patterns (42.4%), placing the performance rank for the pattern at 17 out of 39 patterns. That's slightly better than midrange.

Standard & Poor's 500 change. As double bottoms were climbing 43%, what was the general market doing? The S&P climbed 13%, helping individual stocks to climb as well. Technically, that's not really accurate, is it?

The average is composed of 500 stocks, and as a group, they moved higher from the date of the double bottom's breakout to the date of the ultimate high. However, one could argue that the enthusiasm shown by the group encouraged investors and traders to buy stocks and the rising tide lifted all boats.

Days to ultimate high. How long does it take to reach the ultimate high? Answer: 7 months on average. Thus, be patient but do not fall asleep at the switch. Not all double bottoms will take that long before starting a massive decline (one that either takes price down by more than 20% or below the bottom of the pattern).

How many change trend? I like to see values above 50% for chart patterns. To qualify for a trend change, a stock must see price rise more than 20% after the breakout. The average for all chart patterns is 55%, so Adam & Eve double bottoms slightly outperform the other pattern types.

Table 27.3 shows failure rates. How do you read the table? Let me give you a few examples. In bull markets, 12% of the double bottoms will fail to rise more than 5%. Half will fail to rise 25%.

Table 27.2 General Statistics

Description	Bull Market
Number found	1,020
Reversal (R), continuation (C) occurrence	100% R
Average rise	43%
Standard & Poor's 500 change	13%
Days to ultimate high	216
How many change trend?	57%

Table 27.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market
5 (breakeven)	125 or 12%
10	131 or 25%
15	95 or 34%
20	83 or 43%
25	86 or 51%
30	59 or 57%
35	62 or 63%
50	120 or 75%
75	111 or 85%
Over 75	148 or 100%

The table shows how quickly the failure rates rise for a given price climb. Notice how failures double (from 12% to 25%) as the maximum price move rises from 5% to 10%.

The table gives you a sense of how difficult it can be to make money trading chart patterns.

Let's look at this table differently. Suppose you want to make 20% on your trade. How often will price fail to see that kind of return?

Answer: 43% of the time. Thus, you have to let your winners ride and cut your losses short before the loss gets so big that brokers can't afford to close your account.

Table 27.4 shows breakout-related statistics.

Breakout direction. Price breaks out upward all of the time, by definition. Remember, for this study a breakout means a close above the highest peak between the two bottoms.

Yearly position, performance. Mapping performance onto the yearly price range split into thirds shows that the best performance comes from patterns with breakouts near the yearly high. Avoid those with breakouts within a third of the yearly low. It's possible that the best performing pattern looks like that shown in Figure 27.2, as part of a longer term uptrend.

I checked this idea and found only 49 patterns where the price trend using the trend start was upward, but those double bottoms saw price gain a massive 64% compared to the 975 others with downtrends that gained 42%.

Using another method, the primary trend (which looks back one year before the chart pattern), to determine the trend, the results are more modest. If the primary trend was up, then price gained an average of 42% after the breakout compared to gains averaging 44% for those where the primary trend was down.

I will say that I like how the trend of the results shown in Table 27.4 increases along with which third you're looking at (that is, gains rise from 38% to 42% to 47%. That's better than a mix of up and down results like 47%, 38%, 42%).

Table 27.4 Breakout and Post-Breakout Statistics

Description	Bull Market
Breakout direction	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 38%, M 42%, H 47%
Throwbacks occurrence	67%
Average time to throwback peaks	7% in 6 days
Average time to throwback ends	12 days
Average rise for patterns with throwbacks	39%
Average rise for patterns without throwbacks	52%
Percentage price resumes trend	69%
Performance with breakout day gap	45%
Performance without breakout day gap	42%
Average gap size	$0.45

Throwbacks. The next several rows in Table 27.4 concern throwbacks. In two out of three samples, the stock throws back to the confirmation price. Price rises 7% in just 6 days before reversing. The round-trip takes an average of 12 days.

The penalty a double bottom pays if it has a throwback is big: 17 percentage points. Thus, try to select patterns without nearby overhead resistance that might force the stock back down and cause a throwback.

After a throwback completes, the stock resumes rising (69% of the time, anyway). That's good news. All you have to do is be patient and wait for the stock to recover after a throwback.

Gaps. Breakout day gaps hurt performance, which I find odd. I've seen this in a few other chart patterns, too. Breakout day gaps usually help performance, not hurt it.

Table 27.5 shows pattern size statistics.

Height. Tall patterns outperform short ones, and I find height as one of the premier markers of future performance. To use this finding, compute the formation height from the highest peak to the lowest low in the pattern and divide by the breakout price (the highest high). Compare the result to the median. Values above the median mean you have a tall pattern.

Width. Notice that the two values for width are mirrors of the ones for height. Interesting. A statistical anomaly, to be sure. Wide patterns perform better than narrow ones. I used the median width as the separator between narrow and wide.

Table 27.5 Size Statistics

Description	Bull Market
Tall pattern performance	48%
Short pattern performance	38%
Median height as a percentage of breakout price	12.5%
Narrow pattern performance	38%
Wide pattern performance	48%
Median width	25 days
Short and narrow performance	35%
Short and wide performance	48%
Tall and wide performance	48%
Tall and narrow performance	47%

Height and width combinations. As expected, patterns that are both tall and wide outperformed the other combinations, but not by much, except for short and narrow patterns. Patterns both short and narrow are the ones you'll want to avoid.

Table 27.6 shows volume-related statistics.

Volume trend. The volume trend from the first bottom to the second is downward most of the time. Does it make a difference? Yes.

Rising/Falling volume. Patterns that show volume receding have a three percentage point performance advantage. That may not sound

like much, but every little bit helps. Just remember your results may vary.

Breakout volume. I have read that you should only buy double bottoms if the breakout occurs on heavy volume. Is that true? I found a large six-percentage-point difference between patterns with breakout volume above the 30-day average compared to those with light volume. Even so, I don't think it's true, but that's my opinion. Volume (in other types of chart patterns) usually doesn't give the kind of boost many expect.

Table 27.7 shows how often price reaches a stop location. I looked back at Adam & Adam double bottoms and found they have nearly the same percentages as Adam & Eve patterns. Coincidence or deep state plot?

If you place a stop-loss order at the bottom of the pattern, the stop will hit 3% of the time, on average. However, the loss you may suffer could be quite large. Choose a closer stop location, and the potential loss decreases, but the chance of being stopped out increases. In other words, you have to find a stop location that works for you and your trading style.

Table 27.6 Volume Statistics

Description	Bull Market
Volume trend	70% down
Rising volume trend performance	41%
Falling volume trend performance	44%
Heavy breakout volume performance	45%
Light breakout volume performance	39%

Table 27.7 How Often Stops Hit

Description	Bull Market
Pattern top	76%
Middle	21%
Pattern bottom	3%

Table 27.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	48%
2000s	55%
2010s	34%
Performance (above), Failures (below)	
1990s	5%
2000s	5%
2010s	20%

Table 27.8 shows the performance over three decades.

Performance over time. The 2000s was the best performing decade, and the worst was the 2010s. That's not a good omen, is it?

Failures over time. I counted how often price failed to rise more than 5% after the breakout. The rate was constant during the 1990s and the 2000s, but spiked in the 2010s. I don't know the reason for this. Maybe global warming?

Table 27.9 shows busted pattern performance.

Busted patterns count. Less than a quarter of the patterns busted, which I think is quite good. It says that 23% of the patterns I looked at broke out upward and failed to rise more than 10% before reversing and closing below the bottom of the pattern.

Table 27.9 Busted Patterns

Description	Bull Market
Busted patterns count	230 or 23%
Single bust count	135 or 59%
Double bust count	64 or 28%
Triple+ bust count	31 or 13%
Performance for all busted patterns	–16%
Single busted performance	–24%
Non-busted performance (Adam & Eve double top)	–16%

Busted occurrence. Single busted patterns happen most often, which is reassuring because they perform best.

Busted and non-busted performance. I compared three types of busted patterns: the performance of all busted patterns (single, double, and more than twice—triple+), single busts, and Adam & Eve double *tops*. As you know, double tops break out downward, so they are a good proxy for a non-busted bearish pattern.

Single busted patterns performed best. The other two tied for second place. If you want to short a stock showing a busted double bottom, then try to find a situation where there is little or no underlying support nearby (to help prevent a double or higher bust).

Trading Tactics

As a bullish chart pattern, you need only know when to buy Adam & Eve double bottoms. Selling is, of course, the tough part. Before you buy, consider the trading tactics shown in **Table 27.10**.

Measure rule, targets. The measure rule calculates a target price for the stock. Consider the chart pictured in Figure 27.6. To calculate the predicted target, first determine the formation height by subtracting the lowest low from the highest high in the double bottom. The lowest low in this example occurs at the right bottom, with a price of 27.57. The highest high, marked on the figure by point A, is 31.09. Add the difference, 3.52, to the confirmation price, or the highest high between the two bottoms (that is, 31.09 + 3.52). The result, 34.61, is the target.

The chart shows that price met the target in late December. A few days after meeting the target, price momentarily descended before resuming its climb. During mid-April, the stock reached its ultimate high price of 40.26 before declining (not shown).

Table 27.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height from the highest high to the lowest low between and including the two bottoms and then add the difference to the highest high. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Always wait for confirmation (a close above the highest high).
Trade with market trend	To improve your odds, trade this bullish pattern in bull markets.
Check others in the industry	Are other stocks in the same industry showing bottoming patterns or moving up?
Stop location	Table 27.7 shows how often a stop location gets hit.

Description	Bull Market
Percentage reaching half height target	85%
Percentage reaching full height target	69%
Percentage reaching 2× height	48%
Percentage reaching 3× height	35%

How often does this method work? The bottom portion of the table shows the answer. I used the full height in the above example, and the table says it works 69% of the time. Cut the height in half and success increases to 85%, but profits will likely drop when you sell too early. Use twice or three times the height and the success rate drops, but if the target is achieved, you could make more money. So use the probabilities shown to estimate how far price might rise.

As a check, consult Table 27.3. For example, the height is 3.52 and the top of the pattern is at 31.09 for a potential rise of 3.52/31.09 or 11%.

How often does price fail to rise more than 10% (the closest to 11%). Answer: 25%. That means you've a 75% chance of a winning trade, providing you trade it properly.

Wait for breakout. Once the second bottom of a double bottom occurs, you can use the measure rule to set a target. If the potential profit is large enough, then wait for the breakout before trading. Point A in Figure 27.6 shows the confirmation point with a line extending to the breakout point.

If you decide to trade before waiting for a breakout, 48% of double bottoms will not confirm. That's almost half. You might be right and can buy in at a lower price, but it's a gamble.

Trade with market trend. This is turning into a cliché, but a rising tide lifts all boats. Another way of saying that is to trade with the trend. Avoid making the mistake of being bullish in a bear market, which is like swimming against the current. You may still get to where you are going if a barge doesn't run you over.

Table 27.11 Special Features

Trading Tactic	Performance
Small bottom-to-bottom variation	38%
Large variation	48%
Median bottom-to-bottom variation	1%
Lower left bottom	42%
Lower right bottom	44%

Check others in the industry. I find this tactic particularly useful. Before I trade, I check other stocks in the same industry. If they are rebounding or showing bottom reversals, then that gives me confidence that the trade will work as expected. If the other stocks are heading down, that increases the risk of a failed trade. It may be that this stock is a leading (bullish) indicator for the industry, but why take the chance?

Stop location. Use Table 27.7 to help with stop placement. Be sure to convert the potential dollar loss into a percentage of the current

price. If the loss is too large, then wait for another trade with better probabilities. You don't *have* to trade this pattern.

Table 27.11 shows a few special features that double bottoms share.

Bottom to bottom variation. I computed the median price difference between the two bottoms and compared the performance of patterns larger and smaller than the median. Those with large price variations outperformed.

You might think this finding goes against the Identification Guidelines where the bottoms should be close in price. Close doesn't mean exact, and it was worth checking if any difference gave an advantage. It does.

Lower bottom. Patterns with a lower right bottom performed better after the breakout than did those patterns with a lower left bottom. Who knew?

Experience

Let me tell you about what I found in my trade review.

Public Service Enterprise Group

Public Service Enterprise Group (PEG) is an electric utility. I like utility stocks because of the dividend checks they send me. In mid-2004, the stock formed an Adam & Eve double bottom that confirmed as a valid pattern. The stock broke out upward in a strong push higher and just as promptly threw back. It took its time returning to the breakout price but then gapped open below the bottom of the double bottom. However, it closed above the double bottom's low. Because it didn't *close* below either bottom, it didn't bust the upward breakout.

Less than 2 weeks later, I bought the stock. From my notebook: "AEDB [Adam & Eve double bottom] after throwback. Interest rates are set to rise tomorrow 0.25 points, so that's a negative. This looks like it has bottomed, and utilities are the only thing going up in this market (general, S&P market). Yield is 5.4%."

The stock continued higher. Five days before Christmas word came down that Exelon would buy the company for 52.74 per share. Apparently, the smart money already knew of this deal. Seven trading days earlier, the stock had closed at 43.12, and the day before the announcement it was already at 47.28. On the announcement day, the stock closed at 50.56, a tiny premium above the prior day's close.

Fast forward to 5 March 2005. I must have been getting nervous. The stock was trading above the purchase price of the takeover, so I placed at stop at 53.33. On 22 March, the stock filled at 53.30. "Sell reason: Hit stop as FED [Federal Reserve] raises interest rates."

- Lesson: If you hold onto a number of quality stocks, some of them will be taken over, often at a substantial premium.

I made 35% including dividends on the trade. In this case, the merger fell through in September 2006. By that time, the stock was trading at 72.62, far above the takeover price. On the news, the stock only lost about $4 a share. The stock reached its ultimate high of 104.60 in

January 2008, in the middle of the 2007–2009 bear market. In other words, I sold way too soon.

If I had drawn a trendline connecting the two lows in July and October 2004 and extended that into the future, it would have taken me out of the trade at over $80 a share.

I don't know why I used a stop-loss order on the stock. As a long-term holding, one paying a good dividend, having a stop in place is unusual for me, so I must have been nervous about something, probably the takeover falling through.

- Lesson: Sometimes a stop-loss order takes you out of a big winner prematurely. That's especially true in buy-and-hold investments.

Hughes Supply Inc.

Hughes Supply (HUG) is one of those stocks where I traded it perfectly and lost money. A loss doesn't bother me too much unless it's large or it happens quickly. HUG did both.

The stock made the Adam & Eve double bottom in September 1999. The day after it broke out upward, I was in the stock at just 6 cents above confirmation. From my notebook: “12 October 1999. Resistance at 26, support at 22. I bought at 23 3/8 [not split adjusted] and expect this to continue rising due to hurricane season boosting sales without impacting outlets. That's the hope. Lowes and Home Depot are doing well, but others are not, Fastenal, Building Materials Holding. They are probably not a distributor like this co... I bought because of the double bottom and higher low when compared to low in March. There is a bunch of resistance at 26, so I anticipate a stall at 25 1/2 to 25 7/8. If it punches through, it's up, up, and away. Downside is the twin lows at about 21. Sell at 20 7/8. That's a downside of 10%.”

I didn't log the sale in my notebook, but it happened just 15 days later when the stock threw back and continued down. I had a stop a few pennies below the lower of the two double bottom lows, and it triggered, handing me an 11% loss in just 2 weeks. I like to keep losses to 8% or less, and this happening in 2 weeks is like a kick in the pants.

There's no lesson to share. Entry and exit were both perfect, except I got creamed in between.

Family Dollar

The trade in Family Dollar (FDO) didn't result in a big loss or gain, but it does have some things I want to mention.

In 2005, the stock made an Adam & Eve double bottom. Before confirmation, I bought. From my notebook: “13 October 2005. Bought at: Buy stop at 21.70, a penny above the confirmation price of 21.69. Placed after the market closed. Stop: 1.5× volatility of 81 cents, so a stop at 19.33 would work (below the lowest [double bottom] low). That's a loss of 10.9%, which is a bit on the steep side. But since the market is trending down, it might be a smart play.

“Upside target: 25.50 to 26 for a Big W rise, the site of overhead resistance in July. Buy reason: AEDB (Adam & Eve double bottom)... This stock has been hit (22 stores effectively closed by Katrina), so revenues will be down. Earnings came in a few days ago and net sales as of 6 October were up 9.3% for 5 weeks ending 1 Oct, SSS [same-store sales] up 2.6% for the period. Book score +2.”

The book score is from my book, *Trading Classic Chart Patterns* (Wiley, 2002). Scores above 0 have a greater probability of beating the average rise. Usually I scribble down the target calculated by the scoring system but didn't in this case.

The buy stop triggered the next day and filled at 21.70 to 21.71. This was another case of buying before the pattern confirmed, about a week too early. But it allowed me to buy in at a lower price than waiting for confirmation. In this trade, it made a difference.

Let me be clear on this. I placed a buy stop a penny above the confirmation price of 21.69, and the order filled. However, the pattern didn't confirm at that time. Confirmation happens when the stock *closes* above the confirmation price, and that didn't happen until about a week later.

Three days later, I placed a stop-loss order at 20.32. “This is a volatility stop because one placed below the double bottom low was too far away, and the stock is up this morning. It would have to fall

6% to trigger it. I used the low on 14 October at 21.13 – 0.81 to get 20.32."

What I want to mention here is that I felt the stop below the bottom of the pattern was too far away. So I chose to use a volatility stop instead.

On 20 October 2005, I placed a buy order that executed the next day to buy more shares of the stock, doubling my position. The double bottom had confirmed the day before, so this was the optimum entry, made at 22.78, the opening price for the stock. The problem was, confirmation was at 21.69, which is more than a buck below where I bought.

- Lesson: I often choose to use a buy stop placed a penny above confirmation to get in at a good price even at the risk of a premature breakout (the trading price during the day exceeds confirmation but the closing price remains lower).

I did a study on entry methods and found that using a buy stop instead of waiting for confirmation actually reduces risk and increases profits. However, for statistical purposes, I programmed my computer to wait for confirmation and buy at the opening price a day later.

In this book, I repeat that you should wait for confirmation, but in my actual trading, I buy using a buy stop a penny above the confirmation price. Why? Here's what I wrote on my website (http://thepatternsite.com/BestEntry.html): "Waiting for confirmation, buying at the open the day after price closes above the top of the double bottom, doubles the median rise while cutting the failure rate in half. However, the best entry is to place a buy stop a penny above the top of the double bottom. That cuts the failure rate and marginally boosts the median rise, too."

Returning to the 20 October trade, "Buy reason: Good upside breakout from the double bottom, especially coming on a day when the Dow was down 133 points. I wanted to add more to my position because I think this will Big W move up to 25.50 to 26. I don't particularly like the company or its prospects, but I do think the Dow will recover tomorrow and help keep this stock moving up."

I like countertrend trades, where the stock is moving up when the Dow industrials are dropping, as in this case. I did a study of countertrends, posted on my website, about the effectiveness of countertrend trades, but it's too complicated to discuss here, and I'm not sure this stock actually qualified as a countertrend stock (I haven't checked).

- Lesson: Countertrend trades (when the markets continue lower but the stock continues to rise) can suggest better performance.

Over the following days, I raised the stop four times, chasing price as the stock climbed. “8 December 2005. Stop raised to 22.33, just below the descending triangle that formed. It's the smart play.”

The next day, the stock hit my stop. “Sold at: 22.33, the stop price. Sell reason: hit stop. I raised the stop because I felt a downward breakout from the descending triangle would mean a giveback of any gains.”

On the first trade, I made 3% (using a buy stop). On the second trade, I lost 2% (waiting for confirmation).

I mentioned the book score of +2 earlier. If I sold at the ultimate high on the first trade, I would have made 63%, handily beating the 44% average rise suggested in the book. In other words, the scoring system worked for this trade, predicting a good shot of reaching the average 44% rise (if I hadn't sold too soon, that is).

I sold because of the downward breakout from the descending triangle, but the triangle turned into a 5% failure when price resumed rising. It was a risk to hold onto the stock longer, so I think I made the correct sell decision even though the stock made a substantial rise after I sold.

- Lesson: Sometimes trading well is more important than making money. If you trade well, money will often follow (it prevents bad habits from forming that can cause big losses).

Sample Trade

Lauren is a schoolteacher. Although she loves teaching kids, she would much prefer raking in the dough by trading stocks over the Internet. Until that time, she shoehorns her investment activities into the few hours of free time she has each week.

"When I spotted the double bottom shown in **Figure 27.6**," she placed her hand over her heart and said, "I knew it was love at first sight."

The rounding bottom pattern (from point A to the breakout) suggested higher highs were in store. However, she resisted the temptation to get in early because she could not guarantee price would continue moving up. She justified her action by pretending that she was teaching her students how to trade. If she could not do it properly, how could they?

"The stock climbed to the confirmation price for the double bottom and I was ready to buy. However, when my broker read off the current quote, it had soared well above the confirmation price. So I decided to wait and pray for a throwback."

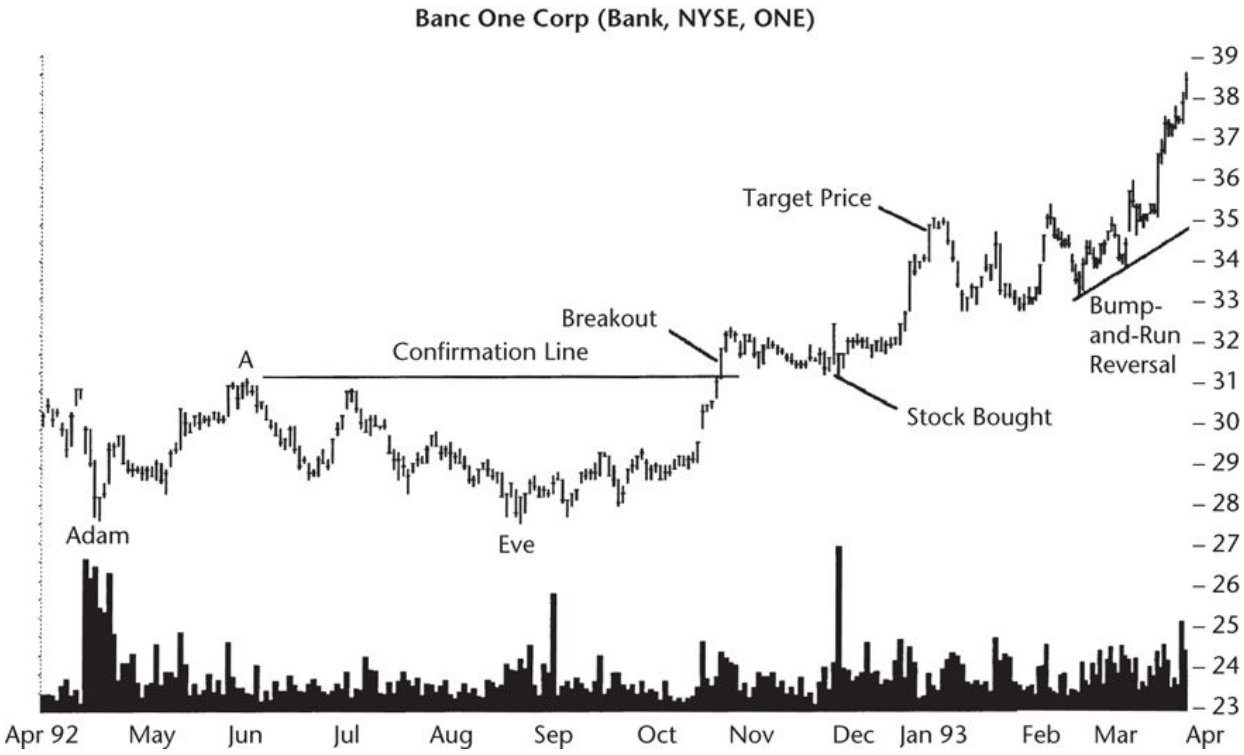


Figure 27.6 Double bottom trading dilemma. How do you trade this double bottom? Do you buy just after the second bottom or wait for price to rise above the confirmation point? A rounding bottom appears from point A to the breakout.

About 4 weeks after the breakout, price dipped to the buy point, but would the stock continue down? “I had to wait until I felt confident that price would rise.” She changed her mind the next day when price made a higher low. It was a gamble, because 2 days of rising prices hardly made a trend. Still, she was getting antsy and didn't want to wait too long and watch price rise above the level that she could have bought a month before. So, she bought the stock and received a fill at 31.38.

The following day, volume spiked to over three million shares and price jumped over 0.75 points. The spike made her nervous as it reminded her of a one-day reversal, but the stock closed at the high for the day, which is odd for the reversal pattern. That is when she remembered to place a stop. “I chose a price of 30.88, about a quarter point below the recent minor low,” an area of prior support.

The following day price erased lower, but succeeding days saw the stock rebound. In mid-December, the stock went ballistic and fulfilled

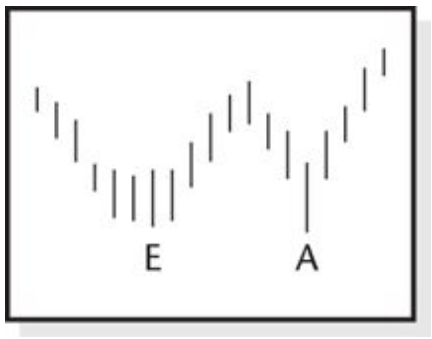
the measure rule. “I couldn't make up her mind if it was worth selling at that point. By the time I decided to sell, the stock had returned to the up-sloping trendline” (drawn connecting the lows in September through January), so she held on.

The stock moved up. In late March, the stock jumped sharply, climbing almost $1.50 in one day. That was a big move for the stock, and she wondered what was going on. She followed the stock closely, and it became obvious the stock had entered the bump phase of a bump-and-run reversal.

Periodically, as the stock climbed (not shown), she penciled in the sell lines parallel to the original bump-and-run reversal trendline. As she looked at the chart, she saw the narrow peak appear and knew the end was near. When the stock dropped below the nearest sell line, she placed an order to sell her holdings and received a fill at 38.63.

“I made 22%,” she said and clucked her tongue, “but on an annualized basis, I made 60%.” She smiled, knowing that annualized numbers were something her math class needed to learn. Now she had the perfect example.

28
Double Bottoms, Eve & Adam



RESULTS SNAPSHOT

Appearance: Twin bottom pattern with the left bottom wide and rounded looking, but the right bottom is narrow and V-shaped.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	20 out of 39
Breakeven failure rate	12%
Average rise	42%
Volume trend	Downward
Throwbacks	67%
Percentage meeting price target	72%
See also	Double bottoms, Adam & Adam; Double bottoms, Adam & Eve; Double bottoms, Eve & Eve

Of the four combinations of Adam and Eve double bottoms, Eve & Adam is the rarest.

A quick review of the Results Snapshot shows that Eve & Adam doesn't perform as well as two of its brothers. The performance is midway down the list. However, the failure rate rank (not shown) comes in at 12 out of 39 (where 1 is best). That's a good showing.

The volume trend is downward, but only 60% of the time. Even if the volume trend is upward, performance doesn't change much.

Throwbacks happen in two of every three trades, so that's reliable. Unfortunately performance suffers if a throwback occurs.

Setting a price target and expecting the stock to reach it is lower than I like to see, but it's fine at 72%. You can adjust the height in the measure rule calculation to suit your needs. I'll discuss that in the Trading Tactics section later in this chapter.

Tour

What does an Eve & Adam double bottom look like? **Figure 28.1** shows a good example of one.

Price trended down in a steady decline to the low in June (the Eve bottom). Volume picked up as price neared the low and then pegged the meter at over 1.1 million shares on 18 June, the day price reached a low of 12.69. From the March high, the stock declined 47% in 3 months. The high volume marked the turning point, and the stock started its recovery. However, a retest of the low was in store and price rounded over and headed down again. In late August, price made another low (the Adam bottom) when the stock dropped to 13.06, also on high volume.

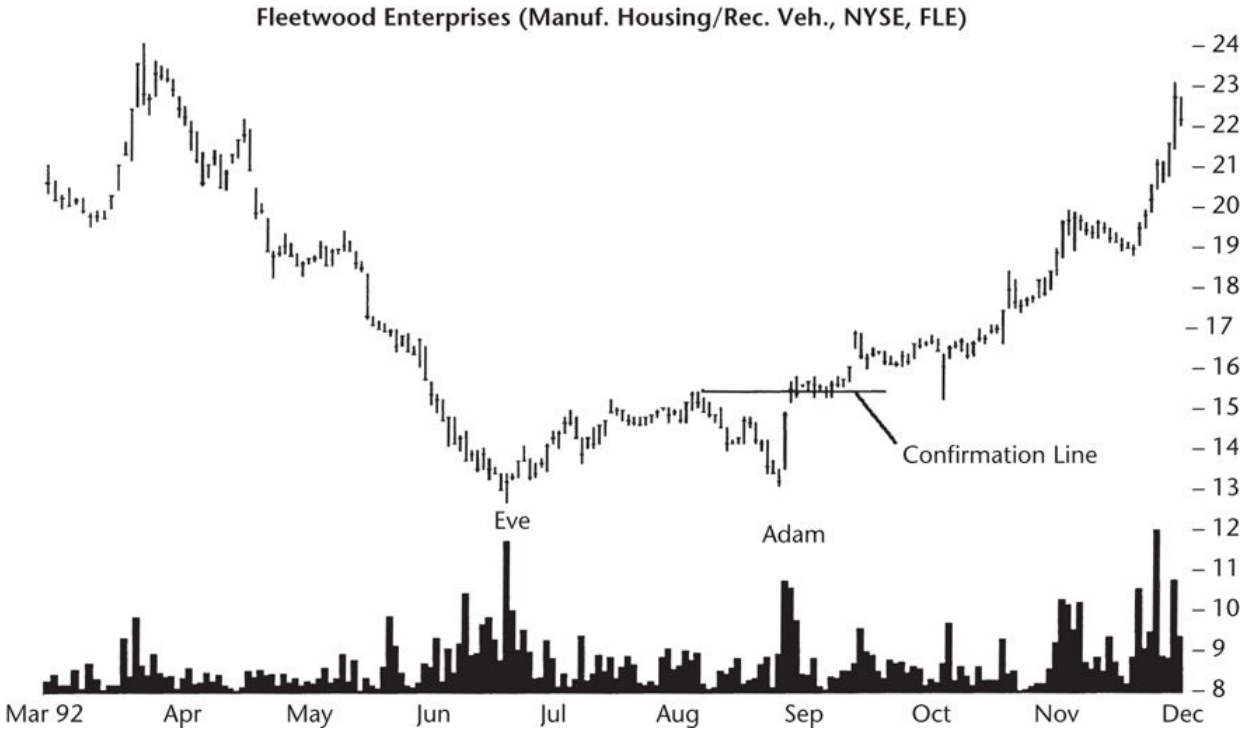


Figure 28.1 A double bottom occurs after a downward price trend. High volume commonly occurs on the left bottom.

The day after the low, on a burst of buying enthusiasm, the stock pole vaulted and reached the confirmation point in just 2 days. Instead of continuing upward, however, the stock skidded sideways along the breakout price for just over a week before resuming its move upward.

By late January, the stock reached a high 75% above the breakout price.

All of that describes how the stock unfolded during 1992. The double bottom pattern at the Eve bottom is a gentle rounded turn, looking like a small cup. Compare that shape to the Adam bottom. Adam is pointed, narrow, and more V-shaped than Eve. Together, they form the Eve & Adam double bottom chart pattern, but only when the stock closes above the highest peak between those two bottoms. Price after the pattern breaks out makes a wonderful recovery, sending price up to near the old high.

Identification Guidelines

How do you identify an Eve & Adam double bottom? While it is easy to find two bottoms near the same price, it can be difficult to distinguish between the combinations of Adam and Eve.

Figure 28.2 shows another example of the Eve & Adam double bottom chart pattern. Although the figure does not show the pattern confirming (a close above the highest high between the two bottoms), the pattern *does* confirm (off the chart to the right), meaning that it is a valid double bottom.

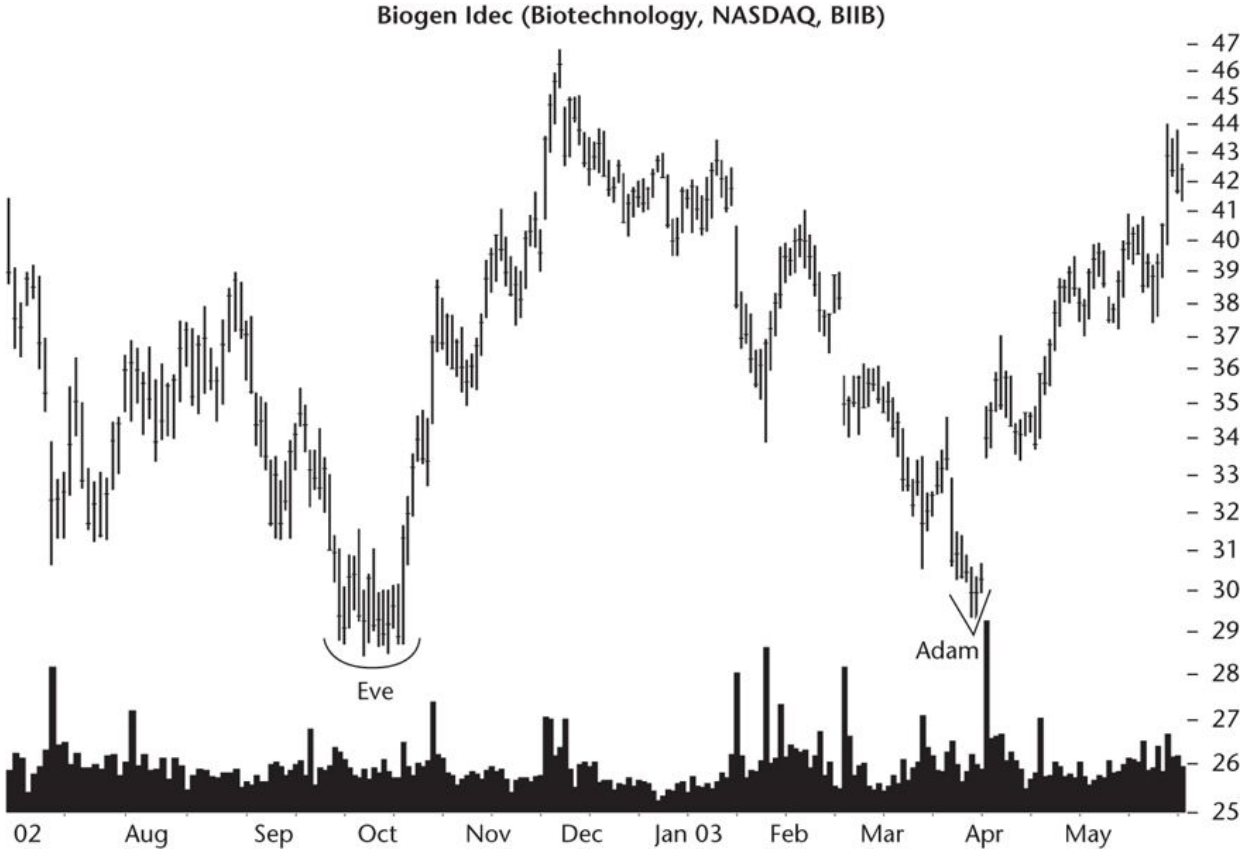


Figure 28.2 The Eve bottom appears rounded and wider than the narrow and V-shaped Adam bottom.

Figure 28.3 The top of the Eve bottom is wider than the Adam bottom. Eve appears rounded and Adam V shaped. The pattern becomes valid once price closes above the confirmation line.

Notice how the two bottoms have different shapes. The Eve bottom is wider and rounded-looking. The Adam bottom is more V shaped, narrower, and usually composed of one or two large downward price spikes. The Eve bottom also has spikes, but they are many and short.

Figure 28.3 shows another example of an Eve & Adam. This Eve bottom has longer spikes than those in the prior figure. The Adam bottom appears V shaped, especially in contrast to the wider and more rounded-looking turn of the Eve bottom.

Now that we've seen a few examples, let's talk about identification.

Table 28.1 lists the guidelines.

Appearance. Look for two valleys that bottom near the same price. Each bottom should be a minor low, not two spikes emanating from the same congestion region, but be flexible.

Do the bottoms have a different shape? If yes, then you are on the right track. The pattern is either an Adam & Eve or Eve & Adam double bottom. The Eve bottom should look rounded and wide (especially near the top of the bottom, if that makes any sense). If spikes appear, they should be short and bunched together. The Adam bottom should look different from Eve. It should be narrower, V-shaped, and usually have a long, one- or two-day downward price spike.

Table 28.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price trends down into a two-valley pattern. The first valley should be a rounded-looking turn. The second should be more V-shaped. Both should bottom near the same price. After the second valley, price rises.
Price trend	Price trends downward into the start of the pattern and should not drift below the left bottom.
Rise between bottoms	Traditionally, the rise between bottoms should be at least 10%, but be flexible. I now allow most any value, but tall patterns outperform short ones.
Bottom low price	Bottom-to-bottom price variation is small (typically 1%).
Bottom separation	Bottoms should be at least a few weeks apart. The median width is 23 days.
Price rise after right bottom	Price must close above the confirmation point without first falling below the right bottom low.
Volume	The right bottom tends to see heavier volume. Don't discard a pattern because it has an unusual volume trend (the performance difference is small).
Breakout direction, confirmation	The breakout is upward when price closes above the highest peak between the two bottoms. An upward breakout confirms the double bottom as a valid chart pattern. If price closes below the bottom of the pattern first, then it's not a valid double bottom.

Price trend. The pattern does not form in a rising price trend unless it is part of a correction (retracement), usually the corrective phase of a measured move up. More often, though, the double bottom marks the end of a downtrend. The inbound price trend need not be very long, but averages about 4 months. I excluded any pattern where there was a price dip below the left bottom. The pattern should have two bottoms, not three or more.

Rise between bottoms. Usually tall patterns perform better than short ones, so look for the rise between the bottoms to be at least 10%. That's an outdated guideline, so you can allow any value you wish. I set no minimum or maximum height restriction.

Bottom low price. Look for bottoms that have almost the same low price. They need not be the same, but the median price variation is small: 1%.

Bottom separation. I allowed bottoms to be as close or as far apart as they felt comfortable, but the median was 23 days. Patterns wider than the median outperform.

Price rise after right bottom. Price should confirm the pattern. Until that time, price should not make a third bottom.

Volume. Most patterns have volume higher on the right bottom, but only 60% of the time. Heavy breakout volume has no effect on performance, either.

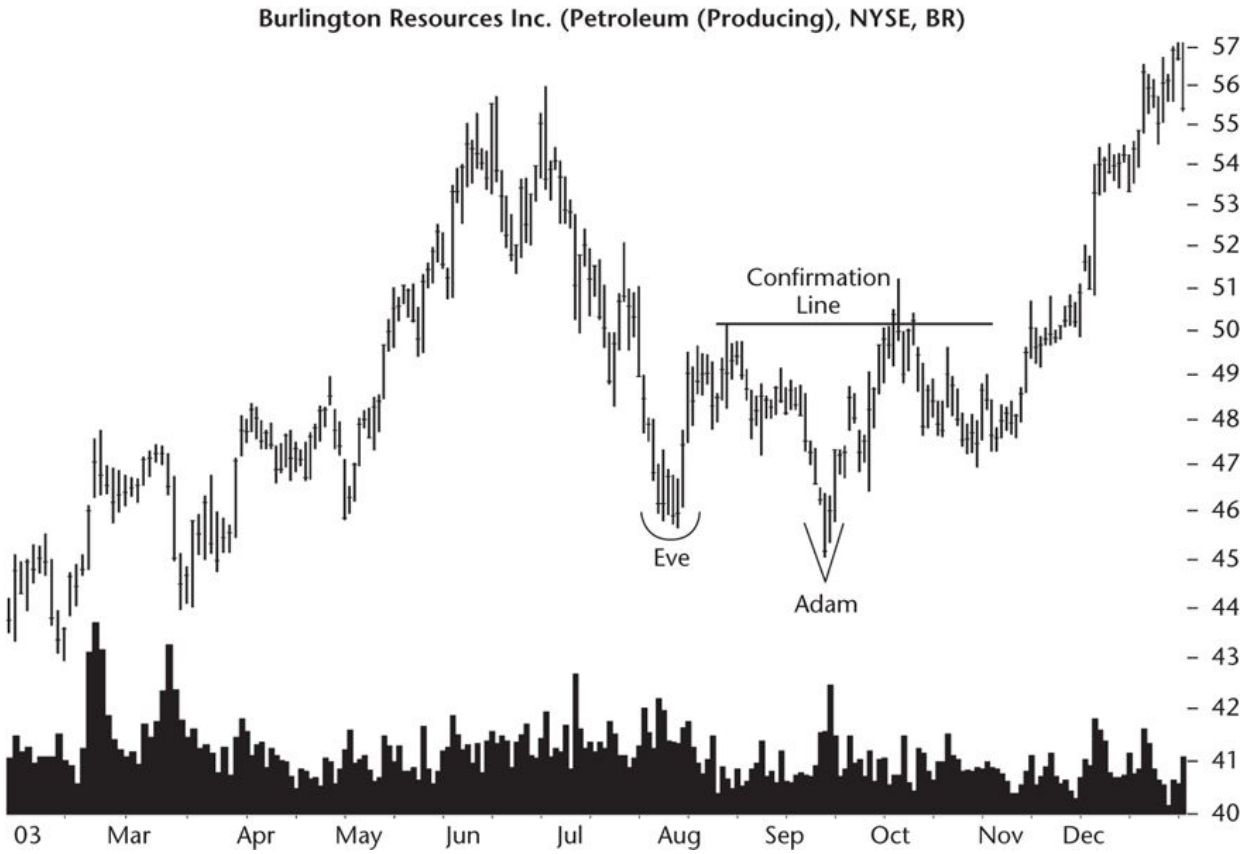


Figure 28.4 An Eve & Adam double bottom with volume higher on the right bottom and tepid breakout volume.

Breakout direction. A breakout happens when price closes above the highest peak between the two bottoms. If price closes below the bottom of the pattern first, it's not a valid double bottom. When price breaks out upward, it confirms the chart pattern as a valid double bottom.

Is the twin bottom shown in **Figure 28.4** a valid Eve & Adam double bottom? Running through the characteristics shown in Table 28.1, we find that the pattern appears at the bottom of a downward price trend. The two bottoms look different—the first one is wider than the second and more rounded-looking, too. The second bottom is narrow and V shaped, with a two-day downward price plunge. The difference between the two bottom lows is small (1%). The separation measures 43 days from bottom low to low. No dips appear on either side of the pattern that would turn this into a triple bottom. Volume is heavier on the right bottom than the left, and the breakout volume is below average.

The pattern is valid. Thank goodness; otherwise I'd have to consider replacing the figure.

Focus on Failures

What can we learn from failures? **Figure 28.5** shows what I call a 5% failure—the failure of the stock to climb more than 5% above the breakout.

Figure 28.5 This is a 5% failure, where price fails to climb much above the breakout price.

The bottom price variation for this double bottom looks wide, but the difference is only 4%. If you scan through the identification characteristics listed in Table 28.1, you will find that the pattern confirms as a true Eve & Adam double bottom.

Why does price fail to rise much above the confirmation price? The answer is typical for these types of failures: overhead resistance. If you were to look at the historical price series for the stock, you would find two tops in early to mid-1996, at 37+. Those tops either peak at the confirmation line or show congestion at or above that price.

In other words, the peaks highlight a resistance zone right above the breakout. In fact, the overhead resistance is so strong that it turns back price in mid-1998 (not shown). This double bottom gained just 3% before tumbling 47%.

On the fundamental side, the company warned in mid-September that full-year earnings would fall about 20%, although the company raised its dividend. A broker downgraded the stock. The stock gapped lower (breakaway gap) on the news.

Did the smart money know about all of this near confirmation? If so, then perhaps they started selling, trying to exit before everyone else learned of the news.

In a moment, we'll see that the 5% failure rate for this chart pattern is 12%. To flip that around, you have an 88% chance of avoiding a 5% failure. You can still botch the trade or wait long enough for a losing position to turn into a winning one. How you trade the stock is up to you.

Before you buy, make sure you understand the risks, both technical and fundamental. Be wary of buying a stock within three weeks of an earnings announcement. I learned that lesson the hard way. There are lots of other checks you can make, but let's focus on the numbers.

Statistics

Table 28.2 shows general statistics.

Number found. Eve & Adam double bottoms are the rarest variation of the four Adam/Eve combinations, as I mentioned. I found only 855 of them in 539 stocks but that includes bear market patterns. Those were too few to include in the statistics. The first double bottom in the study appeared in July 1991, and the most recent was in February 2020. Not all stocks covered the entire time, and some no longer trade.

Reversal (R), continuation (C) occurrence. By definition, this bottom pattern acts as a reversal of the price downtrend.

Average rise. The average rise shown in the table is a bit shy of the 42.4% gain for all chart pattern types. I guess you could say this pattern is an average performer.

However, don't think that you'll be able to make 42% from your trade. The number in the table is an average of hundreds of *perfect* trades. That means buying at the breakout price and selling at the ultimate high. You might be able to do that once or twice in real life (I have), but not hundreds of times.

If you place a stop-loss order too close and get stopped out of a promising trade, then you're watching from the sidelines as the stock doubles.

It can go the other way, too. Buy a stock just before the company announces an earnings shortfall and the stock opens 35% lower, handing you a loss that stings.

Table 28.2 General Statistics

Description	Bull Market
Number found	759
Reversal (R), continuation (C) occurrence	100% R
Average rise	42%
Standard & Poor's 500 change	13%
Days to ultimate high	227
How many change trend?	59%

Standard & Poor's 500 change. The S&P 500 index showed an average rise of 13%, helping to lift the stocks I studied. The sample times were measured from the dates of the breakout and ultimate high of the chart pattern, applied to the index.

Days to ultimate high. A 42% average rise can take a long time to achieve (or not. I traded Conseco—now called CNO Financial Group—in 2009, which doubled in a week). The average time to reach peak performance is just over 7 months. That means traders need to be patient while the stock struggles to achieve its potential. I suppose it's like watching your kids grow up. They can show promise but stumble along the way.

How many change trend? This is a count of how many double bottoms see price rise more than 20%. Values above 50% I consider good, so this pattern does well.

Table 28.3 shows failure rates for the Eve & Adam double bottom. Failures are a count of how often a chart pattern fails to meet a given price rise. Sounds confusing, doesn't it? For example, 12% of the stocks will fail to see price rise by more than 5%. Almost half will fail to see price rise more than 25%.

The rate starts out small (if you can call 12% *small*) but doubles in the next row down. Scan down the rows and the increases are alarming. So expecting a hefty gain from a double bottom might be a dream.

Table 28.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is upward from a double bottom. A breakout happens when price closes above the

highest peak between the two bottoms. If that doesn't happen, then you don't have a valid double bottom.

Yearly position, performance. Mapping performance over the yearly price range, we find that the best performance comes from patterns with breakouts in the middle third of the yearly price range. You'll want to avoid trading double bottoms with the breakout price within a third of the yearly high. They perform worst.

Table 28.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market
5 (breakeven)	88 or 12%
10	92 or 24%
15	66 or 32%
20	63 or 41%
25	60 or 49%
30	46 or 55%
35	51 or 61%
50	99 or 74%
75	86 or 86%
Over 75	108 or 100%

Table 28.4 Breakout and Post-Breakout Statistics

Description	Bull Market
Breakout direction	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 41%, M 50%, H 33%
Throwbacks occurrence	67%
Average time to throwback peaks	7% in 6 days
Average time to throwback ends	12 days
Average rise for patterns with throwbacks	39%
Average rise for patterns without throwbacks	48%
Percentage price resumes trend	74%
Performance with breakout day gap	46%
Performance without breakout day gap	41%
Average gap size	$0.42

Throwbacks. Throwbacks occur twice every three patterns. When they do occur, it takes 12 days on average for the stock to return to the breakout price. However, the appearance of a throwback hurts performance. I guess it's like having ants on your food at a picnic. Joy turns to disappointment. After a throwback completes, the uptrend resumes most often, so don't panic-sell during a throwback.

Gaps. If price gaps upward on the day of breakout, it suggests better performance. Because I measure performance using the opening price the day *after* the gap, you can buy the stock and still hope to participate in the better performance.

Table 28.5 shows pattern size statistics.

Height. Many chart pattern types have tall patterns outperforming short ones, and that's what we see here. In fact, the performance difference between short and tall patterns is quite large.

For a trading advantage, measure the height of the pattern from the tallest peak (between the two bottoms) to the lower of the two bottoms and divide by the price of the tallest peak. If the result is

higher than the median shown in the table, then you have a tall pattern.

With such a large performance difference, it's worth taking the time to check if your double bottom is tall and avoid trading short ones unless there's a compelling reason for doing so.

Table 28.5 Size Statistics

Description	Bull Market
Tall pattern performance	49%
Short pattern performance	36%
Median height as a percentage of breakout price	11.5%
Narrow pattern performance	38%
Wide pattern performance	46%
Median width	23 days
Short and narrow performance	34%
Short and wide performance	42%
Tall and wide performance	48%
Tall and narrow performance	50%

Table 28.6 Volume Statistics

Description	Bull Market
Volume trend	60% down
Rising volume trend performance	41%
Falling volume trend performance	43%
Heavy breakout volume performance	42%
Light breakout volume performance	42%

Width. Wide patterns perform better than narrow ones. I used the median length as the separator between narrow and wide. The performance difference is quite large for this item as well.

Height and width combinations. Tall and wide patterns should produce exceptional gains, and they do, but they are not the

performance winner you'd expect. Rather, tall and narrow double bottoms do best. You'll want to avoid short and narrow ones. They perform worst.

Table 28.6 shows volume-related statistics for Eve & Adam double bottoms.

Volume trend. Volume trends downward most often, but 60% isn't exactly a robust endorsement. Don't discard a chart pattern because it has an atypical volume trend. As we see in the next item, the performance difference isn't worth worrying about.

Rising/Falling volume. Patterns with falling volume perform slightly better than do those with rising volume.

Breakout day volume. Does heavy breakout volume suggest better performance? Not for these chart patterns. I found no performance difference between light and heavy breakout day volume.

Table 28.7 shows how often price reaches a stop location. I split the pattern in half and tabulated how often price returned to various locations on the way to the ultimate high.

For example, if you place a stop-loss order at the bottom of the pattern, it'll trigger 3% of the time. That's a low hit rate, which is good, but the potential loss of having the stop at pattern's bottom could cost you a bundle if it triggers.

When deciding where to place a stop, measure the potential loss and convert it to a percentage of the stock's price. If the percentage is too high (some say 8% or less is good), then look elsewhere for a lower risk trade.

Table 28.8 shows the performance over three decades.

Performance over time. The 2000s, without counting the two bear markets, were the best performing decade. The worst performing decade was also the most recent, the 2010s. That's troubling. Does it mean performance will continue to deteriorate? Time will answer that so don't change the channel.

Failures over time. Notice how failure rates have increased each decade. The failure rate in the 2010s was four times what it was in the 1990s. That's scary, especially if the trend continues.

Table 28.7 How Often Stops Hit

Description	Bull Market
Pattern top	74%
Middle	20%
Pattern bottom	3%

Table 28.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	43%
2000s	58%
2010s	35%
Performance (above), Failures (below)	
1990s	4%
2000s	7%
2010s	16%

Table 28.9 Busted Patterns

Description	Bull Market
Busted patterns count	161 or 21%
Single bust count	85 or 53%
Double bust count	48 or 30%
Triple+ bust count	28 or 17%
Performance for all busted patterns	–15%
Single busted performance	–25%
Non-busted performance (Eve & Adam double top)	–15%

Table 28.9 shows busted pattern performance. I prefer to trade busted patterns where price trends upward after busting, not downward like this pattern. Upward moves can have unlimited gains, but downward ones can only lose 100% of their value.

Busted patterns count. About one in five patterns will bust. A bust happens when price breaks out upward and rises no more than 10%

before turning down and closing below the bottom of the chart pattern (below the lower of the two lows).

Busted occurrence. Single busted patterns happen most often followed by double and triple (or more) busts, respectively. That may sound obvious, but a number of times we see three or more busts placing second for frequency.

Busted and non-busted performance. Single busted patterns perform best by seeing price drop an average of 25% below the bottom of the pattern. I used Eve & Adam double *tops* as the proxy for a non-busted double bottom. The drop from them matches what we see for the combination of single, double, and three or most busts.

Trading Tactics

Table 28.10 shows trading tactics.

Measure rule, targets. To determine how far price may rise, use the measure rule: the height of the double bottom (highest high minus lowest low) added to the breakout price.

For example, the double bottom shown in Figure 28.6 has a confirmation (or breakout) price of 12.50, and the Adam bottom is the lower of the two bottoms, at 9.00. The difference between the two, 3.50, represents the pattern's height. Add this value to the breakout price (the confirmation line of 12.50) to get the target of 16. Price reaches the target in mid-March.

The bottom portion of the table shows how often various heights in the measure rule work. For example, the target just calculated uses the full height. It works, on average, 72% of the time. If you slice the height in half or double it, the success rate changes. The table lists targets using various height multipliers.

Table 28.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height of the pattern from the highest high between the two bottoms to the lowest bottom low. Add the difference to the highest high. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Wait for a close above the confirmation point before taking a position.
Trade with market trend	For best results, buy in a bull market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and buy if they are showing bottoming patterns or if their stocks are rising.
Stop location	Use Table 28.7 for help placing a stop-loss order.

Description	Bull Market
Percentage reaching half height target	89%
Percentage reaching full height target	72%
Percentage reaching 2× height	52%
Percentage reaching 3× height	38%

As a sanity check, consult Table 28.3. For example, we know the height of the double bottom shown in the figure is 3.50, and let's assume the current price is the breakout price, 12.50. The height means a potential rise of 28% to the target. Let's call it a 30% rise. Table 28.3 says that 55% of double bottoms will fail to see price rise that far. That also means you have a 45% chance of having the stock reach the target.

Wait for breakout. I updated a study of the frequency of unconfirmed double bottoms and found that 48% of the time, price

did not confirm the pattern (price closed below the bottom of the pattern instead of breaking out upward). Price must first close above the highest peak between the two bottoms to confirm the pattern as valid. Always wait for confirmation unless you have a special reason for entering a trade earlier (I can get creative in my excuses, such as "I like to lose money" and "The sun was in my eyes." How about you? Any favorites?).

Trade with market trend. Trade double bottoms in bull markets because they are bullish patterns. Even if you make mistakes, a rising tide lifts all boats and the market is more forgiving. Trying to trade a bullish pattern in a bear market is like being swatted by a rolled-up newspaper. It could hurt.

Table 28.11 Special Features

Trading Tactic	Performance
Small bottom-to-bottom variation	39%
Large variation	45%
Median bottom-to-bottom variation	1%
Lower left bottom	45%
Lower right bottom	39%

Check others in the industry. Are other stocks in the same industry doing well? Are they showing bottom reversal patterns (double or triple bottoms, head-and-shoulders bottoms, that sort of thing)? If many companies in the industry are doing well, that should give other investors the courage to buy the stock and add to demand. That activity reduces your chance of a small gain.

However, if stocks in the industry look sick, what makes you think this stock will do well after the breakout? It will be swimming against the industry current.

If the industry is weak, save yourself some money, aggravation, and avoid the stock. Look for a more promising chart pattern in another industry.

Stop location. Table 28.7 shows how often three locations in the double bottom will trigger a stop-loss order if it's placed there. That

gives you an idea of how often you may be stopped out, so visit with the results and tell them Tom sent you.

Table 28.11 shows special features for the Eve & Adam double bottom pattern.

Bottom to bottom variation. I computed the price variation from bottom low to bottom low and then measured the performance for those double bottoms with a price variation larger and smaller than the median. If the bottoms were uneven by more than the median, they tended to perform better. We've seen this result for other double bottoms types, too.

Lower bottom. Double bottoms with a left bottom below the price of the right bottom tended to perform better after the breakout. To me, this makes sense because a higher second bottom suggests more buying enthusiasm near the old low. People started buying the stock before it reached the price of the prior bottom, halting the decline.

Experience

Let me tell you about what I found in my trade review.

Alaska Air Group

This is one of those trades where I look at the chart and thank the stars I sold in time. It happened in March 2001 when the stock in Alaska Air Group (ALK) formed the Eve bottom. In late June, the Adam bottom was in place. The pattern confirmed in mid-July as a valid Eve & Adam double bottom.

Here's my notebook entry: “23 July 2001. I bought at 32.19, at market. The stock has completed a confirmed Eve & Adam double bottom coupled with an upside earnings surprise on 19 July. The stock has moved higher but may have overhead resistance at 32–33, where it is now trading. I expect it to push through this region, then post new highs.”

The earnings announcement may be the reason I didn't buy when the double bottom confirmed or even why I didn't have a buy stop ready to get me into the trade.

- Lesson: Avoid buying shares within 3 weeks of an earnings announcement.

“Oil prices are falling, but OPEC is expected to tighten the spigot in coming weeks, putting upward pressure on fuel prices. Economy is slow, but some predict it's bottoming. The airline is one of the few still profitable. Sell in the early Spring when the market for airline stocks usually goes soft (strong starting in the fall). Upside is 38, another mild resistance zone. Downside is 28, a prior support zone in March through June 2000 on weekly scale. That would put the loss at a rather steep 13%. That region is also just below the double top high, a likely support zone. This is a risky trade due to overhead resistance so I limited the position size.”

The stock cooperated by moving sideways for a week but then easing higher, forming what looked like a rounded top.

Here's the sell details: “6 September 2001. I put a stop at 31.50 this morning and it was hit. The stock has breached a support level, and

with weakness in the economy and September/October upon us, it's time to leave with a small loss. I should have bought at the breakout price."

On the trade, I lost 2%. Here's the kicker, and the date says it all: Five days later was 9/11. The stock market didn't open for a week, and when it did, the stock was down to 22.24. It bottomed near the end of the month, at 17.40, a drop of 45% below the sale price. I sold the stock just in time and escaped being slaughtered.

- Lesson: Sometimes you don't know how well you have traded until well after the sale.

Cache

I was going to show you a chart of this trade, but there's not much to see. Coming off the 2007–2009 bear market, Cache (CACH) dropped and bounced, forming an Eve & Adam double bottom, with the second bottom in March 2009, bottoming just 3 days before the bear market officially ended (I didn't know it at the time, of course).

The chart pattern confirmed on 26 March, turning the squiggles into a valid double bottom. Price moved up in a nice straight-line run, and I bought when it formed a handle of a cup. That's what it looked like. On the left of the chart was the left rim, then the double bottom, and a right rim mirroring the one on the left. A handle 18 days long followed, and I bought about midway in that handle.

From my notebook: "9 April 2009. Buy reason: S&P rates stock a hold. Has nearly 0 [long-term] debt. Has TONS of insider buying since September but share sizes are unimpressive (20k largest, 936 shares, smallest). Ford has strong sell. 3 of 5 ratios are at bottom. P/E [price to earnings] is [not applicable because they didn't make a profit] and [price to cash flow] is midrange since cash flow has dried up. Earnings are negative. Late to a confirmed Eve & Adam double bottom."

Upside target was 8, 13, and 16 with a potential stop of 2.63 or 19.7% below the current price. With a stop so far away, I didn't place it. I think this was a buy-and-hold-type trade, one where I often don't use a stop.

Confirmation of the double bottom was at 2.29, and I bought at 3.10, or 35% above the optimum entry. So that was really awful.

- Lesson: Bottoms are often V-shaped. Tops are more rounded appearing. You have to be quicker to buy at a bottom than to exit at a top.
- Lesson: Buy as close to confirmation as you can. It helps limit risk and increase profit.

I'm not sure why I didn't buy earlier, but I knew by the entry I was late, as my notebook entry acknowledges.

The closest target was 8, far above the 3.10 buy price. Why so far away? The bear market sucked the stock down quickly from a peak at 13.90 to a low of 1.41, or a 90% drop in 3 months. On the weekly scale, it looked as if the stock stepped off a cliff. So there weren't many pauses along the way that would make for good resistance targets on the way back up.

Having resistance far above the current price isn't a bad thing, really. You can hope that price doesn't pause along the way to the target, but that's often wishful thinking.

In 2008, the stock made a slowly rising channel from 8 to 15, so that's where it called home. I was hoping it would return home, but it only got halfway there.

After I bought, the stock cooperated, though, helped by traders returning to a bull market. The stock climbed to 5 and then turned right. It retraced back to a low of 3.20 in July 2009, and peaked at 7.25 in the spring of 2010 (which would have been a wonderful time to sell). After that, the stock made a dip that dropped the stock in half before bringing it back up.

For the sale, I have two notebook entries, one on the day before the sale: “10 January 2012. Order details: Sell limit order, day, at 5.93. Sell reason: Broker downgraded the stock, and I want to exit the women's apparel stocks. I'm taking the profit with a market order at the open tomorrow. This is trading near the yearly high, and it's a good time to exit. I expect a downward breakout from the ascending triangle. Since this is so thinly traded, I'm hoping I can get a good fill

but doubt it. I changed the market order to a limit order near the day's open today (Tuesday).”

The ascending triangle started in May 2011 and lasted to January 2012, about a week after I sold, with an upward breakout. That's a hint that I sold too soon.

Here's my notebook for the day I sold: “Sell reason: Fundamentals, weakness. If the prediction is right that the market will drop in March, I am liquidating my stocks that show gains and are looking to drop. This recently peaked, but I don't like the industry (women's apparel) and a broker downgraded the stock.”

I sold near the bottom touch of the triangle, almost 3 months before the stock peaked at 7.88. After that, it was a steady drop to 2.00 in December (a 75% decline).

My instincts on this trade were good, helped by the ending of the bear market where almost anything you buy soars. I bought in late, left early, and made 86%. Annualized, that's a gain of 31% a year, which is wonderful, too.

- Lesson: The end of a bear market provides wonderful opportunities for stocks to recover. All you need is the courage and the cash to buy. I bought in late, left early, and almost doubled my money.

Sample Trade

Figure 28.6 shows a trade Willie made in the stock. He ran through Table 28.1 and checked the identification characteristics against the pattern. Briefly, the stock price was trending down to the first bottom of the double bottom.

The Eve bottom caused him concern because the twin spikes were long but separated by a few days. Was the Eve bottom really an Adam bottom, or was it a narrow Adam & Adam double bottom by itself?

The Adam bottom had a shorter spike. Was it an Eve bottom? He looked above the spikes and saw that the Eve bottom was several weeks wide but the Adam bottom remained narrow over most of its height. He concluded that the pattern was an Eve & Adam double bottom.

The rise between bottoms was over 10%, and the bottoms looked to be about 6 weeks apart. Volume was higher on the left bottom than the right, spelling good news for performance.

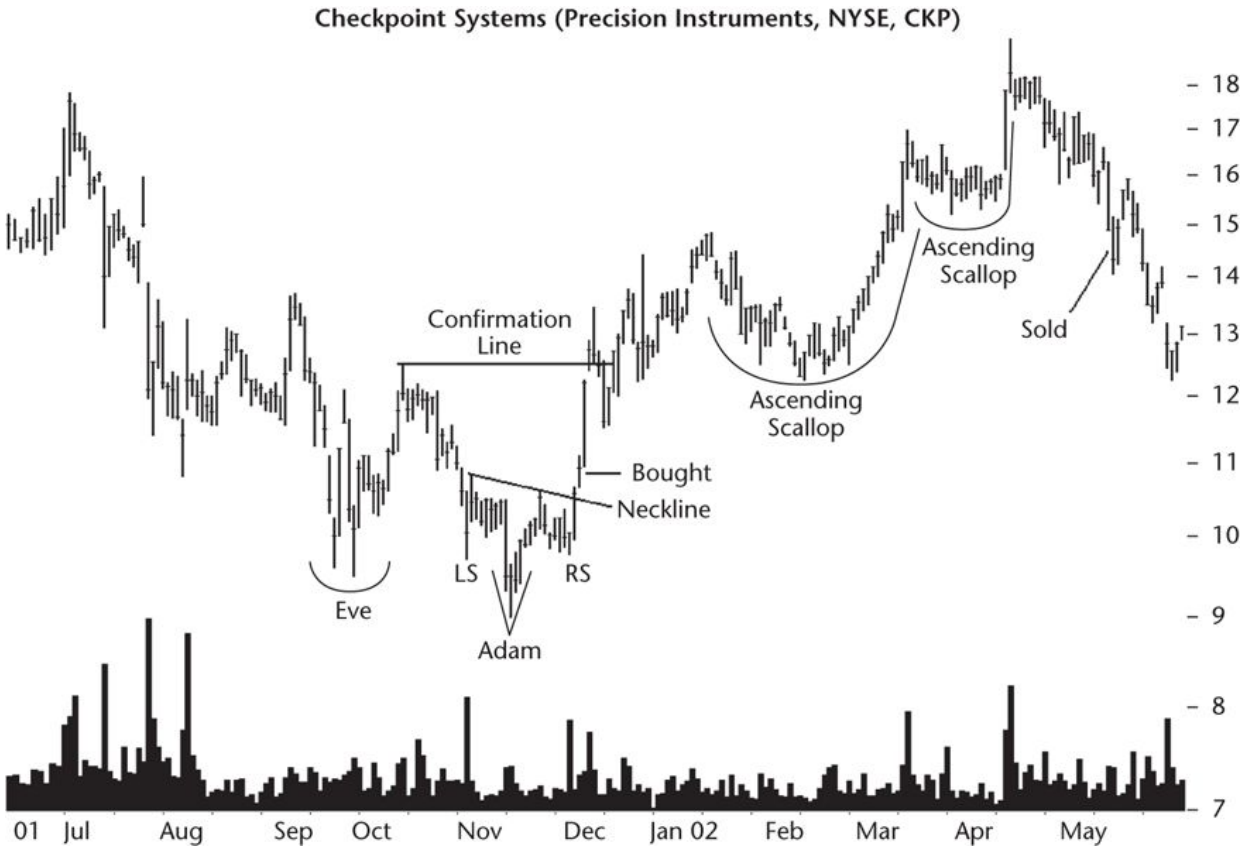


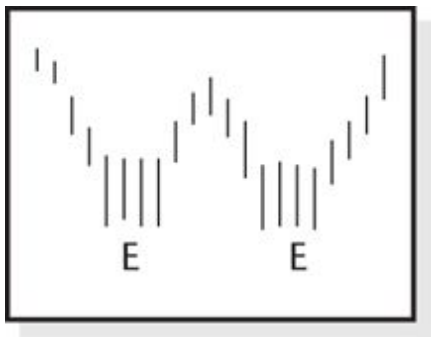
Figure 28.6 As described in the Sample Trade, Willie bought early into this Eve & Adam double bottom. He sold when price dropped below the narrowing, ascending scallop.

"I watched the pattern develop, and lo and behold, a head-and-shoulders bottom appeared before my very eyes." He drew in the down-sloping neckline and when price closed above it, confirming the head-and-shoulders bottom, he bought the stock and received a fill at 11.00. After that, it took just 2 days for price to confirm the double bottom pattern.

"I rode the stock higher like I was competing in a rodeo, and the stock took on the shape of an ascending scallop"—a rounded turn with a right handle. "When the second scallop appeared, I got concerned." Sometimes, consecutive ascending scallops get narrower as they appear higher in the price trend. An unusually narrow one sometimes appears just before price peaks.

"So I decided to sell as soon as price dropped below the scallop bowl. That occurred in early May," and he received a fill at 14.93, for a net gain of 35%—and that was in a bear market.

29
Double Bottoms, Eve & Eve



RESULTS SNAPSHOT

Appearance: A twin bottom pattern with wide, rounded bottoms.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	5 out of 39
Breakeven failure rate	12%
Average rise	50%
Volume trend	Downward
Throwbacks	65%
Percentage meeting price target	65%
See also	Double bottoms, Adam & Adam; Double bottoms, Adam & Eve; Double bottoms, Eve & Adam

The Eve & Eve double bottom is what many refer to as the classic “double bottom.” It sports two rounded bottoms, well separated, with

a rounded climb between them. That is the ideal pattern, but few look like that in the real world.

Of the four varieties of double bottoms, the Eve & Eve double bottom has the highest average rise—50%—in bull markets, ranking 5 out of 39 where a rank of 1 is best. I can see why this chart pattern is a classic. The performance rank is more than three times better than the other three varieties of Adam and Eve double bottoms. Not only that, but it has a comparatively low breakeven failure rate, 12%, ranking 13 out of 39 (not shown). What more could a trader want?

Let's take a look at this double bottom variant.

Tour

What does an Eve & Eve double bottom look like? **Figure 29.1** shows a good example of the twin Eve bottom. This double bottom forms after a broadening bottom chart pattern (the pattern on the left of the chart). The two Eve bottoms are wide, rounded, and distinct lows separated so that they are not part of the same congestion region. The rise between the two bottoms in this example measures an unusually tall 40%. In March, price closed above the highest high in the pattern, confirming the twin bottom as a true double bottom.

Why does a double bottom form? All chart patterns show the struggle between buying demand and selling pressure. When price drops to a point where traders view the stock as a steal, they buy. If buying demand is high enough, the stock moves up in price. That is why the bottom usually shows a volume spike or high volume. In a double bottom, selling pressure balances buying demand, making the bottom turn long and gentle as bulls and bears struggle for dominance.

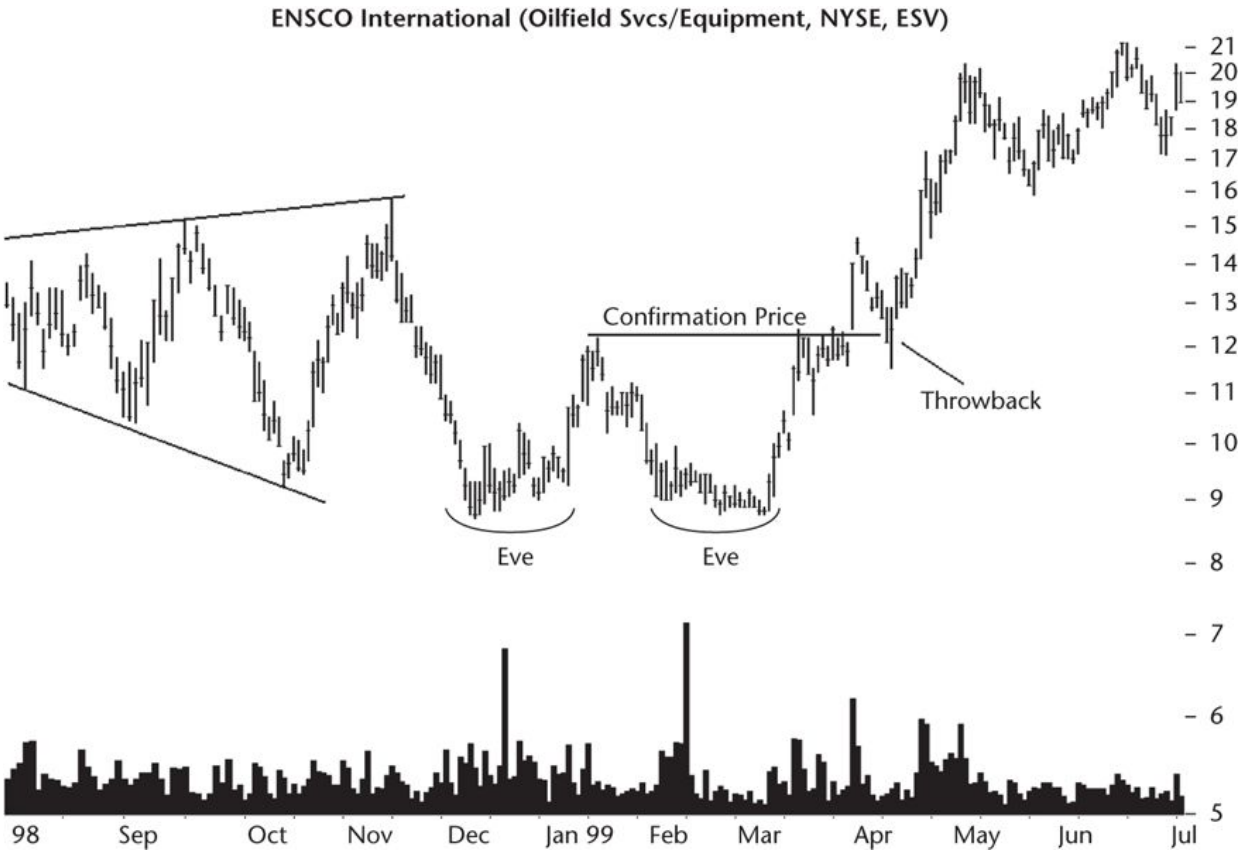


Figure 29.1 A broadening bottom leads to an Eve & Eve double bottom. The two Eve bottoms are wide and rounded appearing. Price climbed 67% after the breakout.

When buying demand prevails, price rises and continues to rise until sellers, viewing the stock as overbought, take profits. This selling pressure eventually stalls the upward move. When other traders see the upward momentum slowing, they dump their shares and down goes the stock.

When price drops to a low enough level, the smart money accumulates shares again, sometimes quietly and sometimes not. Others see the slowing downward price trend and predict a turn. They buy, too.

As price pulls out of its dive, more traders buy and the second Eve bottom forms as a gentle rounded-looking turn, often near the price of the first bottom. Price begins climbing again. When it approaches the high between the two bottoms, it often stalls there as traders take profit.

In a confirmed double bottom, the selling pressure does not send the price down again. Instead, traders sense the intrinsic strength and buy. This buying demand forces the price to tick up, moving above the high between the two bottoms. That is the breakout signal. It turns squiggles on the price chart into a valid double bottom.

Technical traders watching from the sidelines buy the stock in droves. Volume skyrockets along with price. Reluctant sellers dump the stock to eager buyers. Price climbs for several days and then things change. About two-thirds of the time, price throws back to the breakout price. The throwback is brief before price gathers strength and rises again, soaring to new highs.

Identification Guidelines

I find identifying Eve & Eve double bottoms is easier than identifying birds, but, in both cases, you have to know what to look for. Not just any two bottoms at the same price will suffice for an Eve & Eve double bottom.

Listed in **Table 29.1** are guidelines that make correct selections easier. While considering the guidelines, look at **Figure 29.2**.

Appearance. Assign each double bottom pattern into its Adam and Eve category. Adam bottoms are narrow and V shaped, perhaps with a one- or two-day downward price spike. Eve bottoms are wide, rounded turns. They may also have price spikes, but they are usually shorter and more plentiful.

Price trend. The stock shown in the figure begins declining in mid-October 1993 (not shown) from a price of about 56.50. It bottoms out at about 41.50 in mid-May, forming the first Eve bottom. Price never drops below the left low on the way to the first bottom. The reason for this guideline is to avoid triple bottoms or those patterns that do not act as reversals.

The two points marked A and B represent an incorrectly selected double bottom because point A has lower lows to the left of it. It acts as a continuation of the upward price trend and not a bottom reversal.

Table 29.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for two valleys that appear after a downtrend. Each valley should be wide and rounded-looking. After that, price rises.
Price trend	Price trends downward to the pattern and should not drift below the left bottom.
Rise between bottoms	Most any height will do, but taller is better. The traditional measure is at least 10% from the lowest valley to the highest peak between the two bottoms.
Bottom low price	Bottom-to-bottom price variation is small. The median is 1%.
Bottom separation	Bottoms should be at least a few weeks apart, but allow exceptions.
Price rise after right bottom	Price must close above the confirmation point without first falling below the right bottom low.
Volume	Usually higher on the left bottom than the right.
Breakout direction, confirmation	The breakout is upward by definition. Price has to close above the highest peak between the two bottoms. When that happens, it confirms the pattern as a valid double bottom.

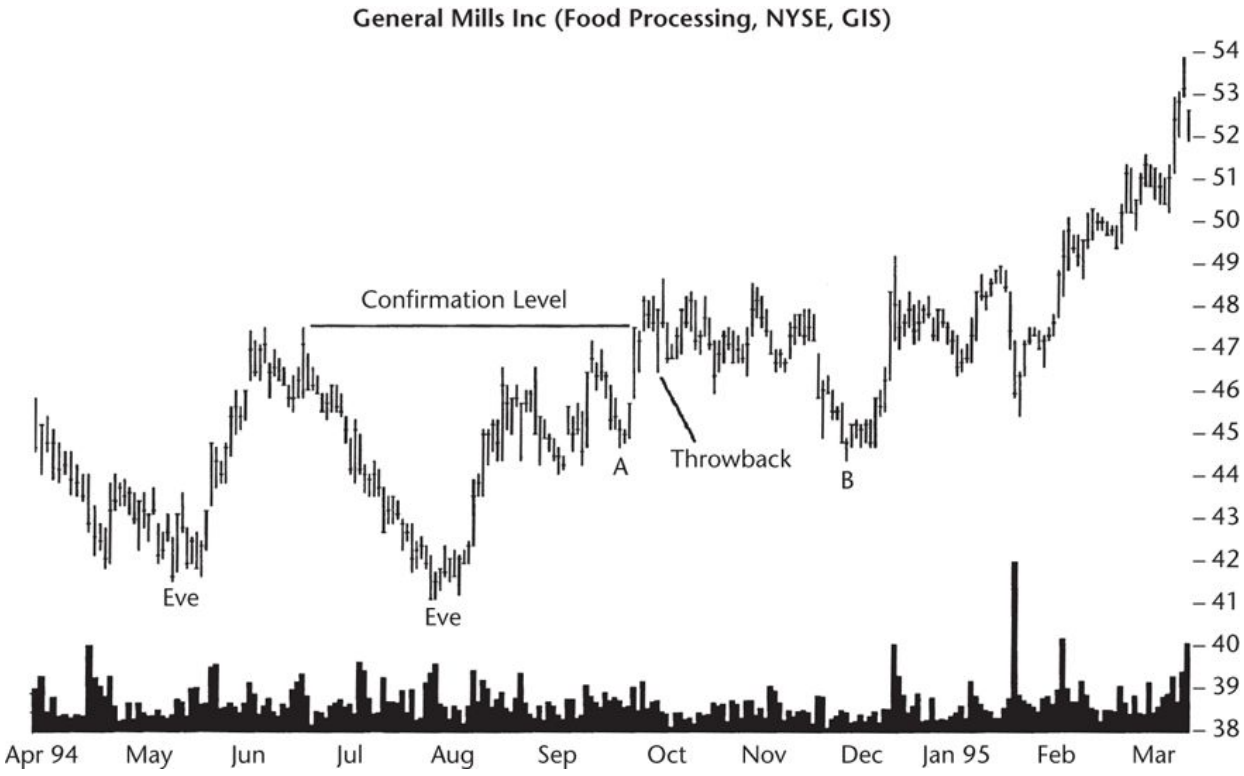


Figure 29.2 Points A and B do not depict a double bottom because there are lower lows to the immediate left of point A.

Rise between bottoms. When I first started studying double bottoms, lots of books said that the rise between the two bottoms should be at least 10%, as measured from the lowest bottom low to the rise high. None of them proved it or said why it's important. I threw away that requirement and decided to let the pattern tell me how tall it should be. I found that taller is better, so the 10% guideline is fine (although I allow many shorter patterns).

Bottom low price. The bottom-to-bottom price variation should be small. The basic rule is that the two bottoms should appear near one another on the price scale. The figure shows a price variation of about 1%. That value matches the median difference, too.

Bottom separation. The two bottoms should be at least a few weeks apart but that's an arbitrary value. Eve turns are frequently wide enough to require a few weeks to complete (not always, of course). Many bottoms in a double bottom are separated by several months, like the one shown. A month is the minimum separation that many professionals view as leading to powerful rallies. I set a lower standard to help verify that this is true. It is.

Price rise after right bottom. Price should rise up to the confirmation price without first making a third bottom.

Volume. The volume chart for double bottoms usually shows the highest volume occurring on the left bottom. Diminished volume appears on the right bottom, and the volume trend of the overall chart pattern is downward.

None of these are absolute rules. Sometimes volume is highest on the right bottom instead of the left. Don't discard a chart pattern because of an unusual volume pattern.

Breakout direction. All double bottoms break out upward by definition. If they don't, then they are not double bottoms. What is a breakout? It happens when the stock closes above the highest peak between the two bottoms.

Confirmation. The confirmation point is the same as the breakout price. It's the highest high between the two bottoms. It's when squiggles on a price chart become a valid double bottom.

Why wait for confirmation? In a study I did, I found that 48% of the time price broke out downward from a twin bottom pattern instead of confirming it as a valid double bottom. Thus, if you buy before confirmation, on average, you'll likely lose money nearly half the time.

Now that you know what a double bottom looks like, let's discuss how to separate the bottoms into their proper Adam or Eve category.

Figure 29.3 shows another example of an Eve & Eve double bottom but one harder to identify. Both bottoms have a one-day downward spike, which is more typical of an Adam bottom. However, as your gaze moves up, the bottom widens. If you were to shave off that one day's growth, you would have a rounding turn on both bottoms. Adam bottoms are narrower and usually taller. Adam bottoms often have price spikes (one or two), but they are longer than what you see on Eve bottoms.

A good example of an Adam bottom occurs in December when price plunges downward for three days. The bottom looks narrow and pointed, not wide and rounded. Notice the difference between the Adam and Eve bottoms.

When trying to determine whether the double bottom has Adam or Eve components, ask yourself if the two bottoms look similar (Adam & Adam or Eve & Eve) or different (Adam & Eve or Eve & Adam). If they look the same, are the bottoms wide or narrow, pointed or rounded?

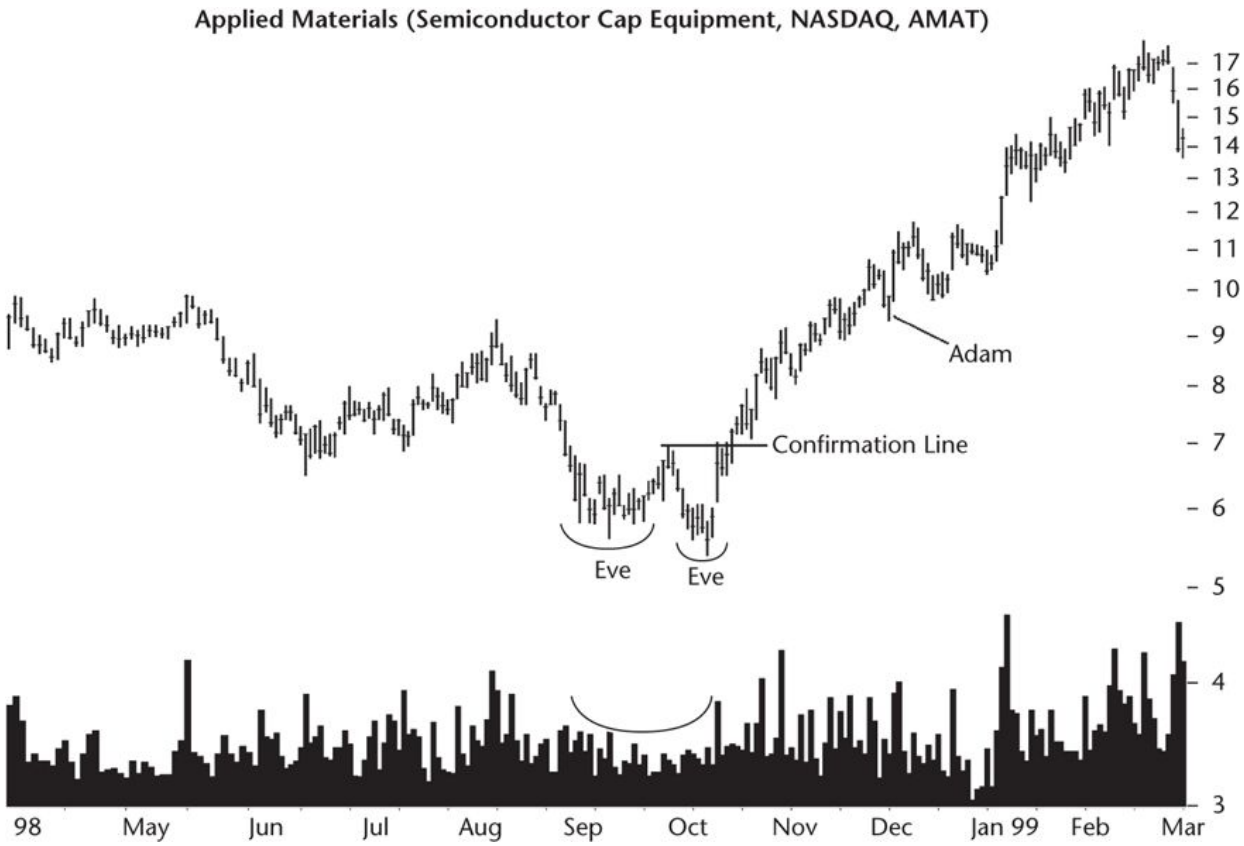


Figure 29.3 These two Eve bottoms are wider and more rounded than the Adam bottom in December, despite having one-day downward price spikes.

Let us look at another example, **Figure 29.4**. The left Eve bottom is narrower than the right one, and it looks like a widely spaced horn (it has two minor lows). The right bottom looks wide, but it is V shaped. Are these Adam bottoms?

Sometimes the answer lies not in the bottoms themselves, but in the surrounding landscape. I searched the stock for examples of Adam and Eve bottoms and they appear in the inset. Clearly, the differences between the two are startling. Compare each inset with the alleged Eve & Eve double bottom. Which inset looks like the double bottom? I think the Eve inset matches each Eve bottom.

Trying to figure out if you're looking at Eve or Adam is subjective. I computerized the identifying of Adam and Eve bottoms to provide consistency across my research.

Focus on Failures

Figure 29.5 is a test. Is this an Eve & Eve bottom or an Eve & Adam? The answer is, of course, who cares? The stock failed to climb much after the breakout, and I consider losing money more important than identification.

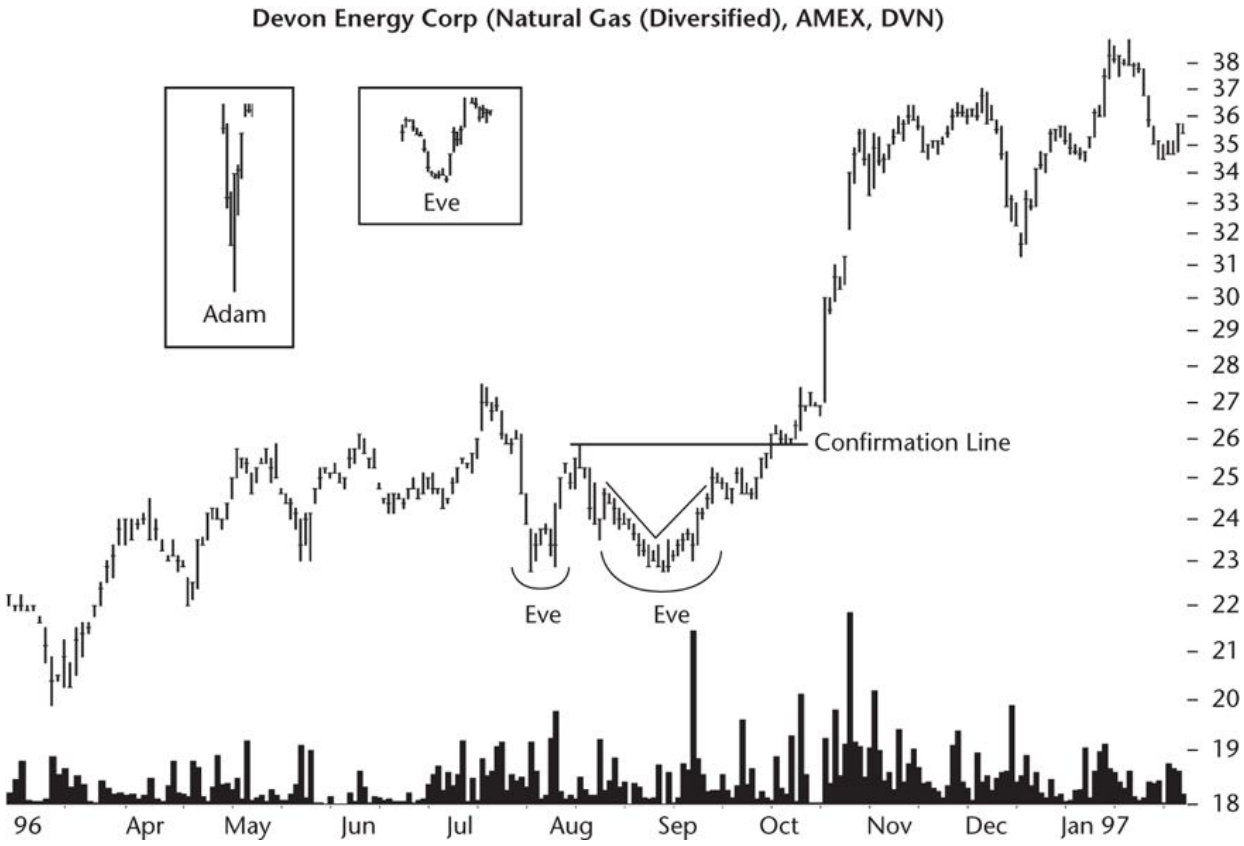


Figure 29.4 Two minor lows compose the left Eve bottom, and the right bottom appears V shaped.

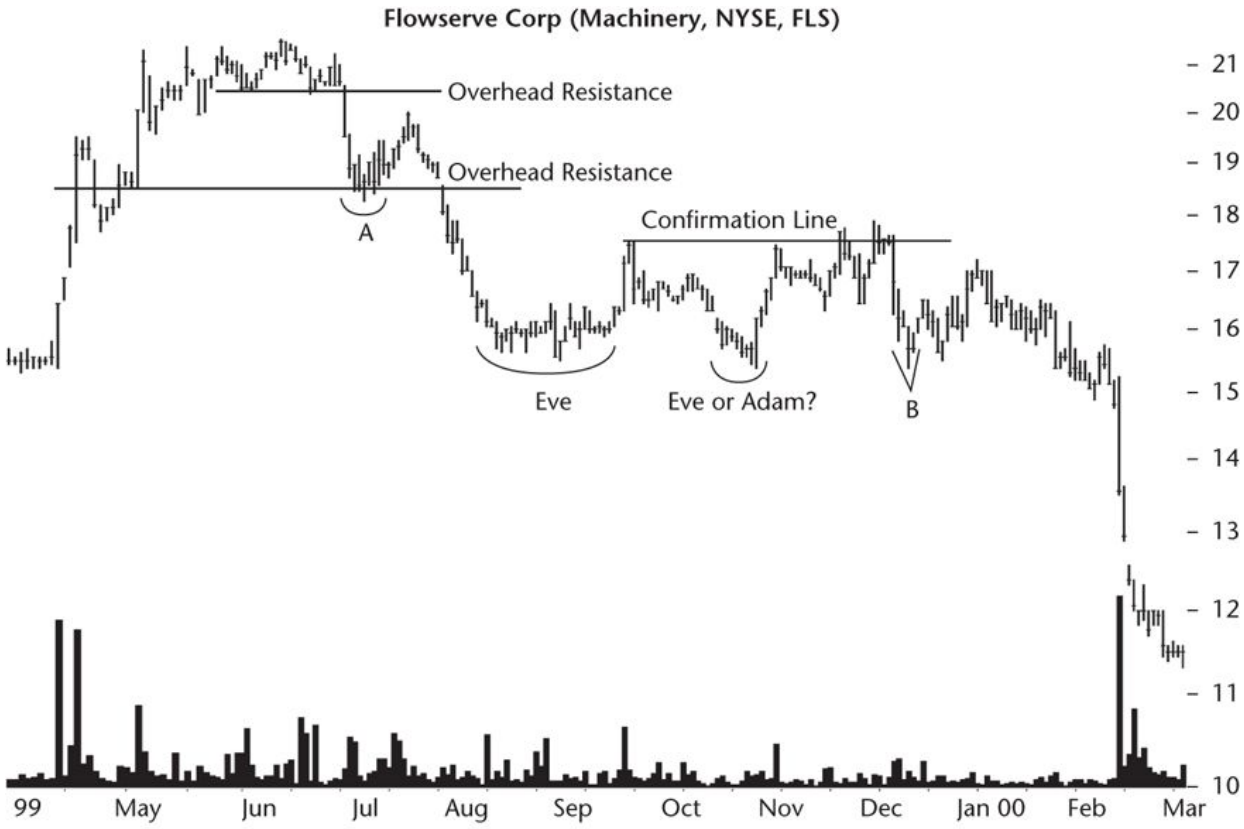


Figure 29.5 Is this an Eve & Eve bottom or an Eve & Adam bottom, and why did price fail to rise far?

The left Eve bottom most would argue is a true Eve bottom. It appears wide and rounded, not needle-sharp like an Adam bottom. What about the right bottom? No one- or two-day price spike appears. It does look V shaped if you consider the V as slanting to one side. Does it look like the Eve bottom at point A or the Adam bottom at point B? My computer says this double bottom is an Eve & Eve pattern.

Why did price not climb far after the breakout? I have highlighted two overhead resistance zones. The top one looks strong enough to turn back most advances (because it's wide and flat). The lower one is a solid block in late June (at A), but it's short. It extends back to April, but April is looser looking. Tighter is often better than loose (I measured this).

Before the April to August price bump, the stock was in a long-term decline. A block of horizontal price movement appeared at 17.50 that was 3 months long (not shown) if you include some minor lows. Thus,

the reason the Eve & Eve pattern failed to rise was overhead resistance coupled with a deteriorating fundamental picture.

I like to know what is going on in the stocks I follow. I keep a database of events and can match an event to the price action. The company released earnings on both sides of the April/August price bump. The first release helped power price up, and the second helped cut it down. During creation of the Eve bottom, news appeared that machine tool orders were soft (down 2%) month-to-month and down 30% from the prior year. Coupled with increased foreign competition and insider selling, the fundamentals were turning bad. That information did not help the technical picture.

Statistics

Table 29.2 shows general statistics.

Number found. I found 1,093 patterns in 675 stocks from September 1991 to February 2020. Not all stocks covered the entire period, and some stocks no longer trade. Because bear market samples didn't rise to the threshold I set for this edition, I don't include them in this presentation. That's why I show fewer than 1,000 patterns in the table.

Table 29.2 General Statistics

Description	Bull Market
Number found	952
Reversal (R), continuation (C) occurrence	100% R
Average rise	50%
Standard & Poor's 500 change	13%
Days to ultimate high	222
How many change trend?	61%

Reversal (R), continuation (C) occurrence. Because price enters the chart pattern from the top and exits out the top, the pattern acts as a reversal of the downward price trend, by definition.

Average rise. The average rise in bull markets is one of the better performances I have seen for chart patterns.

Standard & Poor's 500 change. The strong general market upswing (13%) in bull markets helped carry along the chart pattern's average rise (50%). I can't say whether that's really true, but a rising tide lifts all boats. I'm beginning to dislike that cliché, though, because I use it too much. I guess it wouldn't be a cliché if people like me didn't use it.

Days to ultimate high. How long does it take price to top out? Answer: about 7 months. If you want to reach the ultimate high, it will take a long time for a stock to rise 50%. The duration is an average, though. The median is just 71 days (about 10 weeks).

How many change trend? Out of 39 chart patterns, the Eve & Eve double bottom ranks 8 where a rank of 1 is best. I like to see values above 50%, and this chart pattern far exceeds that. By the way, I added this measure to count how many double bottoms see price rise more than 20% after the breakout. It was my attempt to determine if a chart pattern led to a sustained trend.

Table 29.3 shows failure rates for double bottoms. Let me give you some examples of how you read this table. In bull markets, 12% of the patterns failed to see price rise more than 5% after the breakout. Twenty-three percent didn't exceed a 10% rise.

Notice how failure rates nearly triple (to 32% from 12%) for rises of no more than 15%. Half the patterns will stop climbing before reaching 30%. This alarming progression of failures is typical for all chart patterns. It emphasizes that making money using chart patterns isn't as simple as buying the first one you see.

Table 29.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market
5 (breakeven)	111 or 12%
10	104 or 23%
15	92 or 32%
20	60 or 39%
25	73 or 46%
30	65 or 53%
35	51 or 58%
50	105 or 69%
75	113 or 81%
Over 75	178 or 100%

Table 29.4 Breakout and Post-Breakout Statistics

Description	Bull Market
Breakout direction	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 52%, M 47%, H 52%
Throwbacks occurrence	65%
Average time to throwback peaks	8% in 6 days
Average time to throwback ends	12 days
Average rise for patterns with throwbacks	46%
Average rise for patterns without throwbacks	57%
Percentage price resumes trend	72%
Performance with breakout day gap	53%
Performance without breakout day gap	49%
Average gap size	$0.45

Table 29.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is always upward from a double bottom. If the double bottom breaks out downward first (a close below the bottom of the lowest valley), then it's not a valid double bottom.

Yearly position, performance. Where are the best performing double bottoms located? The performance numbers are closer than I expected, but it's clear that you want to avoid patterns with breakouts in the middle third of the yearly high–low price range.

Throwbacks. Throwbacks occur about two-thirds of the time. They give investors another opportunity to take a position in a stock or to add to an existing position. When price does throw back, it takes 12 days (on average) from the stock to return to the breakout price. That suggests price peaks in less than a week (which it does: 6 days after rising 8%) and then drops back.

Notice that patterns having a throwback pay a penalty for performance. After a throwback completes, price resumes rising 72%

of the time. That means the other 28% continue lower. So there's a risk when a throwback occurs.

Gaps. Breakout day gaps help performance in bull markets. I measured performance from the opening price the day *after* the gap to the ultimate high, so even if you miss owning the stock when a gap happens, you can still participate in the better performance. The numbers are averages, so your results may vary.

Table 29.5 Size Statistics

Description	Bull Market
Tall pattern performance	50%
Short pattern performance	49%
Median height as a percentage of breakout price	14.7%
Narrow pattern performance	47%
Wide pattern performance	53%
Median width	36 days
Short and narrow performance	47%
Short and wide performance	54%
Tall and wide performance	52%
Tall and narrow performance	45%

Table 29.5 shows pattern size statistics.

Height. The results surprise me because tall patterns usually perform significantly better than short ones. That is still true, but the performance difference is minimal (one percentage point).

To use this result, measure the double bottom's height from the highest high between the two bottoms to the lowest low in the pattern and then divide by the highest high (the breakout price). If the result is smaller than the median listed in the table, then you have a short pattern.

The median values (31% rise for tall patterns versus 24% for short ones) show a bigger difference, so checking for height is a task you should consider. Trade only tall patterns unless you have good reasons for doing otherwise.

Width. I measured the pattern width from lowest low in the left bottom to the right bottom low. Those patterns wider than the median performed substantially better than narrower ones. I've been seeing that trend in many patterns (that is, wide patterns beating narrow ones), but the indicator isn't as good as height in predicting future performance.

Height and width combinations. If you look at the table and see tall patterns perform best and wide patterns perform best, you'd expect the combination of tall and wide to beat the performance of the other combinations. But that's not what happens here. Short and wide patterns come in first place and tall and wide place second. You'll want to avoid tall and narrow ones, though (they perform worst).

Table 29.6 shows volume-related statistics. I removed volume shapes because for wide patterns, volume often formed different shapes within the pattern and determining the actual shape was too subjective.

Volume trend. Volume trends downward most of the time, but don't discard a chart pattern simply because it has a rising volume trend.

Table 29.6 Volume Statistics

Description	Bull Market
Volume trend	63% down
Rising volume trend performance	50%
Falling volume trend performance	49%
Heavy breakout volume performance	48%
Light breakout volume performance	55%

Table 29.7 How Often Stops Hit

Description	Bull Market
Pattern top	77%
Middle	18%
Pattern bottom	2%

Rising/Falling volume. Indeed, a rising volume trend Eve & Eve double bottom shows slightly better performance than one with falling volume. However, the difference may not be statistically significant.

Breakout day volume. Many technical analysts will say that heavy breakout volume suggests strong performance and you should avoid patterns with light breakout volume. These statistics say the opposite, that patterns with breakout day volume below the 30-day average show better performance.

Table 29.7 shows how often price reaches a stop location. I split the double bottom into pieces (half, really) and found that if a trader placed a stop at the bottom of the pattern, the stop would trigger an average of 2% of the time. The other two locations show higher hit rates.

You can use this information to help you decide where to place a stop (or if you should even use a stop). Just remember that a stop too far away may entail a substantial loss.

You might take the time to convert the potential loss into a percentage of the current price (divide the two and multiple by 100). If the percentage makes your hair stand up, be thankful you still have hair and consider adjusting your stop placement.

Table 29.8 shows the performance over three decades. Here's where the ride gets bumpy.

Performance over time. The 2010s showed the worst performance and the 2000s the best. I am concerned that the most recent decade had the worst performance. Does that mean performance going forward will struggle, too?

Table 29.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	46%
2000s	60%
2010s	41%
Performance (above), Failures (below)	
1990s	8%
2000s	6%
2010s	20%

Table 29.9 Busted Patterns

Description	Bull Market
Busted patterns count	189 or 20%
Single bust count	100 or 53%
Double bust count	67 or 35%
Triple+ bust count	22 or 12%
Performance for all busted patterns	–15%
Single busted performance	–23%
Non-busted performance (Eve & Eve double top)	–16%

Failures over time. Here the differences are startling, with failures tripling in the 2010s from the prior decade. Note that I removed the bear markets from all of the numbers in the table (bear markets only happened in the 2000s). Failures, by the way, are a count of how many chart patterns failed to see price rise more than 5% after the breakout.

Table 29.9 shows busted pattern performance. I prefer to see bearish patterns bust, not bullish ones (as in the case of a busted Eve & Eve double bottom).

Busted patterns count. One of every five double bottoms will bust. That means price will rise no more than 10% before collapsing and closing below the lower of the two bottoms.

Busted occurrence. Single busted patterns happen most often, which is typical. If you're confused about what a single, double, or triple+ bust means, consult the Glossary. There, I have included a picture for your viewing pleasure. Don't forget to bring the popcorn.

Busted and non-busted performance. I used Eve & Eve double *tops* to gauge the performance of non-busted patterns. Only single busted double bottoms outperformed the non-busted counterparts.

Trading Tactics

Table 29.10 shows trading tactics for Eve & Eve double bottoms. They are the same as for other double bottoms.

Measure rule, targets. Use the measure rule to predict a target price. Having a target to aim at may allow you to get out near the peak. If price nears the target, evaluate the situation. Will price continue moving higher, or is there a larger likelihood of a drop?

To find the price target, compute the height of the pattern by subtracting the lowest low in the bottom from the highest high between the two bottoms. Add the result to the highest high to get the price target.

For example, Figure 29.6 shows an Eve & Eve double bottom. The lowest low in the pattern is the left bottom at 14.27. The highest high is 18.39 (the breakout or confirmation price). Add the difference, 4.12, to the highest high to get a target of 22.51. In this example, price rose to only 20 before dropping.

You can use Table 29.3 to check the probability of your stock reaching the target. In this example, a move of 4.12 from the launch point of 18.39 means a 22% rise. If we ignore that the double bottom shown occurs in a bear market, Table 29.3 says that 39% of Eve & Eve double bottoms will fail to see price rise more than 20%. It's probably more like 41% will fail to see a 22% rise. It also means 59% or so will succeed. The trade has a lot of risk, and it's up to you to decide whether to take that risk.

Table 29.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern height from the highest high between the two bottoms to the lowest bottom low. Add the difference to the highest high. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Wait for a close above the confirmation point before buying.
Trade with market trend	For best results, buy in a bull market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and buy if they are showing bottoming patterns or if their stocks are rising.
Stop location	Use Table 29.7 to help determine stock location.

Description	Bull Market
Percentage reaching half height target	85%
Percentage reaching full height target	66%
Percentage reaching 2× height	46%
Percentage reaching 3× height	33%

The bottom portion of the table shows how often price will reach the target. Using the full height, as in our example, price will reach the target 66% of the time. Use half the height or three times the height and the likelihood of success changes, as the table shows.

Wait for breakout. Even in bull markets, trying to anticipate a bottom by buying a stock simply because it seems “cheap” is not a good strategy. Tomorrow, the price may be cheaper. By next week, the company could declare bankruptcy.

With double bottoms, waiting for price to close above the confirmation price is a good way to trade. You can still lose money, but that is the way to bet.

Trade with market trend. Let the smart money trade against the prevailing trend. You should follow in their footsteps only after they have cleared a path through the landmines. In other words, trade with the general market trend. Buy bullish chart patterns (like double bottoms) in a rising stock market. Avoid going long in bear markets.

Check others in the industry. If other stocks in the same industry are doing well, then that bolsters the case that your double bottom will break out upward, reversing the downward price trend. If other stocks in the same industry are showing bullish bottoming patterns or if their stock price is rising, then trade the double bottom.

If price in other stocks is breaking down, making lower lows, then look elsewhere for a more promising situation. Double bottoms are plentiful. Keep searching.

Stop location. Table 29.7 can help with stop placement. Be sure to convert the potential loss as a function of the current price into a percentage. Try not to gasp if the result is big. You'll wake the baby.

Table 29.11 shows special performance features of double bottoms.

Bottom-to-bottom variation. Do double bottoms with small price variations in their bottom lows perform better than do those with large variations? No. Large variations see better performance than small ones.

Table 29.11 Special Features

Trading Tactic	Performance
Small bottom-to-bottom variation	47%
Large variation	53%
Median bottom-to-bottom variation	1%
Lower left bottom	51%
Lower right bottom	49%

To get this result, I computed the price difference between the bottoms of each double bottom and then found the median of all patterns studied. Those with bottom-to-bottom price differences higher than the median were termed large; lower than the median were termed small.

Lower bottom. When the left bottom was below the right bottom, performance improved after the breakout. The performance difference is marginal, though, just two percentage points. Still, an edge is an edge.

Experience

Let me tell you about what I found in my trade review.

Guess Inc.

In the spring of 2003, Guess Inc. (GES) started making a run for the moon. It climbed from a low of 1.65 to 9.79. That was a warning that the stock would move sideways to rest for a spell. Because the stock rose by almost six times, the likely horizontal move would last for months.

- Lesson: If a stock makes a significant climb, expect a sideways move of extended duration, proportional to the height of the rise.

I don't think I knew that then, and if I did, I ignored it. The stock formed an Eve & Eve double bottom in the rarified atmosphere near 7. The stock confirmed the double bottom at 8, and I was there with cash in hand, ready to give it to the smart money.

From my notebook: “18 June 2004. Filled at: 8.065 [adjusted for split]. Stop: 7.29 for a [potential] loss of 10%. This is below the minor low on 4 May 2004. Upside target: 9.92 for a 23% rise. I expect price to stall near old high, say 9.25.

“Mood (will trade work? Bought too soon?): Excited but cautious. I don't expect this to work out well. I think the market is about to tumble. Buy reason: EEDB [Eve & Eve double bottom]. The apparel market seems to be doing well. In the last few days, the stocks have moved higher, strongly. Many are like this one: They've reached a yearly high, then backtracked and are struggling to recover. The bad news is that it has a PE [price-to-earnings ratio] of 50. *Ouch*. I have my doubts about this one working, but if the market continues to climb, this might do well, too.”

I placed the stop with my broker and watched as the stock threw back to the breakout and continued lower. It hit my stop and filled at 7.28.

A day after I sold, the stock bottomed and completed a triple bottom, which later confirmed as valid. However, the stock only climbed as high as 9.17 (8.5% above confirmation of the triple top) before dropping below 6. So it wasn't a big gainer, either.

I made a perfect entry but either sold too soon (I could have let price climb up to confirm the triple bottom) or sold too late (during the double bottom throwback). I lost 10% on the trade.

I think the real key to this trade was the lesson stated earlier, that of knowing price was going to rest after a strong uptrend (which it did, for about a year).

CH Energy

I was sorry to see CH Energy (CHG) stock stop trading when it was taken over by another company. I liked the dividends the electric utility paid and capital appreciation sweetened the deal.

This is one of those trades where you don't try to do what I did unless you're an experienced trader. On 3 June 2010, “I bought because this has bounced off what I consider a forming double bottom low, yielding 5.7%, and I have lots of cash that's just sitting there earning zip. I bought it for the yield.”

If you look at the chart, you'd see the Eve & Eve double bottom clearly on the chart, bottoming after the 2007–2009 bear market. I bought as the second bottom was forming, so I got in well before confirmation.

- Lesson: Don't try this at home. Often waiting for confirmation is the correct approach.

After I bought, the stock climbed. It looked like a rising staircase with no huge plunges to frighten the children.

On 5 April 2011, I placed a limit order to sell at 52 and it filled. Apparently, 52 was my target. From my notebook: “Sell reason: Hit target. Since the stock is moving up, I decided to sell only half my position.”

On the trade, I made 35%, including those tasty dividends. Even better, the stock peaked the next day and dropped down to 48 and change about a week later. I love it when the stock later shows I was right to sell. However, in this case, the decline was short-lived. It move sideways in the mid-50s for the rest of the year and then jumped to the mid-60s during the takeover.

Cypress Semiconductor

The trade in Cypress Semiconductor (CY) I would call a mistake and that's good because it gives me something to write about.

The stock started trending higher from the September 2004 low and formed an Eve & Eve double bottom along the way. This double bottom acted not as a reversal pattern but as a continuation. They look weird because they don't have a left side that towers above the pattern (I like to see the left side be above the top of the peak between the two bottoms. In this case, the stock only made it about three-quarters of the way up).

On 7 February 2005, I bought the stock, filled at 12.69. Here's my notebook: “Stop: 11.05, just below the pennant in February. Upside target: 15.71. Future NASDAQ direction (guess): I expect the NASDAQ to stall at the knot of overhead resistance and turn down. That's not good for the stock, but it shows strong upward momentum, and I'm hoping the flag will support the stock.

“Buy reason: EEDB [Eve & Eve double bottom]. A strong breakout on Friday suggests an extended move, but I think the fundamentals are weak. This may throw back at 14 due to knot of resistance in June 2004. The 13–16 range is going to be a problem for this stock (May to June consolidation region—a MMD [measured move down chart pattern] corrective phase). If the NASDAQ turns around (continues up), this stock might do well. I chose this over Intel because of the book score. Intel has a –4 score and an upward breakout from a descending triangle.”

- Lesson: Never chase a stock. If you can't get in at a good price, wait for a retrace or look elsewhere for a better trade.

Confirmation of the double bottom was at 11.83, and I bought the stock at 12.69, or 7% above the optimum entry price. Now, I wouldn't touch the stock until it behaved.

Perhaps you heard me yelling for the exit three days later. I sold, and the order filled at 13.28. “Sell reason: Stock has made what looks like a tail. Time to sell before I give back more profit and the stock plunges.”

If you are familiar with candle patterns, the stock made a gravestone doji or shooting star. In non-candle terms, it was a tail or spike. The stock made a tall upward move but ended the day near the bottom of the trading range, right where it began. Often tails, if followed by a lower high the next day, mean price has peaked and will head lower for a few days (or longer). The key is, you have to wait to see if the price bar stands alone like a single tree atop a hill.

In this case, it didn't. The tail was buried in a forest. The stock continued higher for about another 2 weeks. I made 4% in 3 days, which isn't bad if I could annualize it (do that every 3 trading days for a year).

- Lesson: If a technical pattern unfolds (the tail in this case), wait for it to complete before trading.

If the stock had turned lower, then this would have been a terrific exit. Unfortunately, that didn't happen. Also, tails that shoot lower are more reliable than those that shoot upward.

- Lesson: Bullish tails (downward price spikes) work better than bearish ones (upward spikes).

Sample Trade

Not all chart pattern trades work as expected, and **Figure 29.6** shows an example. To be sure we are dealing with a valid Eve & Eve double bottom, let us run through the identification guidelines.

Is the price trending downward to the pattern? Yes. Although the figure shows a high in mid-January (B), the stock peaked back in mid-November 1999 (not shown).

Do both bottoms resemble an Eve bottom? The shape appears rounded in both bottoms. The left bottom comprises two minor lows, but if you exclude the first minor low (shown as point A), the Eve assessment does not change.

The rise between the bottoms is 29%, and the bottoms are 4% apart in price and 18 days distant (measured from lowest low to lowest low). This is one of the narrower Eve bottoms, but it is still fine.

Volume is higher on the right bottom than the left in bear markets. This observation suggests slightly better performance (a rising price trend, from Table 29.6), but does not guarantee it. Price rises up to and closes above the confirmation price without first dropping below the right bottom low, so the breakout is upward. The pattern is a valid double bottom.

What happened after the breakout? Price climbed enough to clear the confirmation line, then threw back and continued down. The stock reached a low of 4.24, recovered, and then dropped more, bottoming at 2.02 in February 2003 (not shown, but *ouch!*).

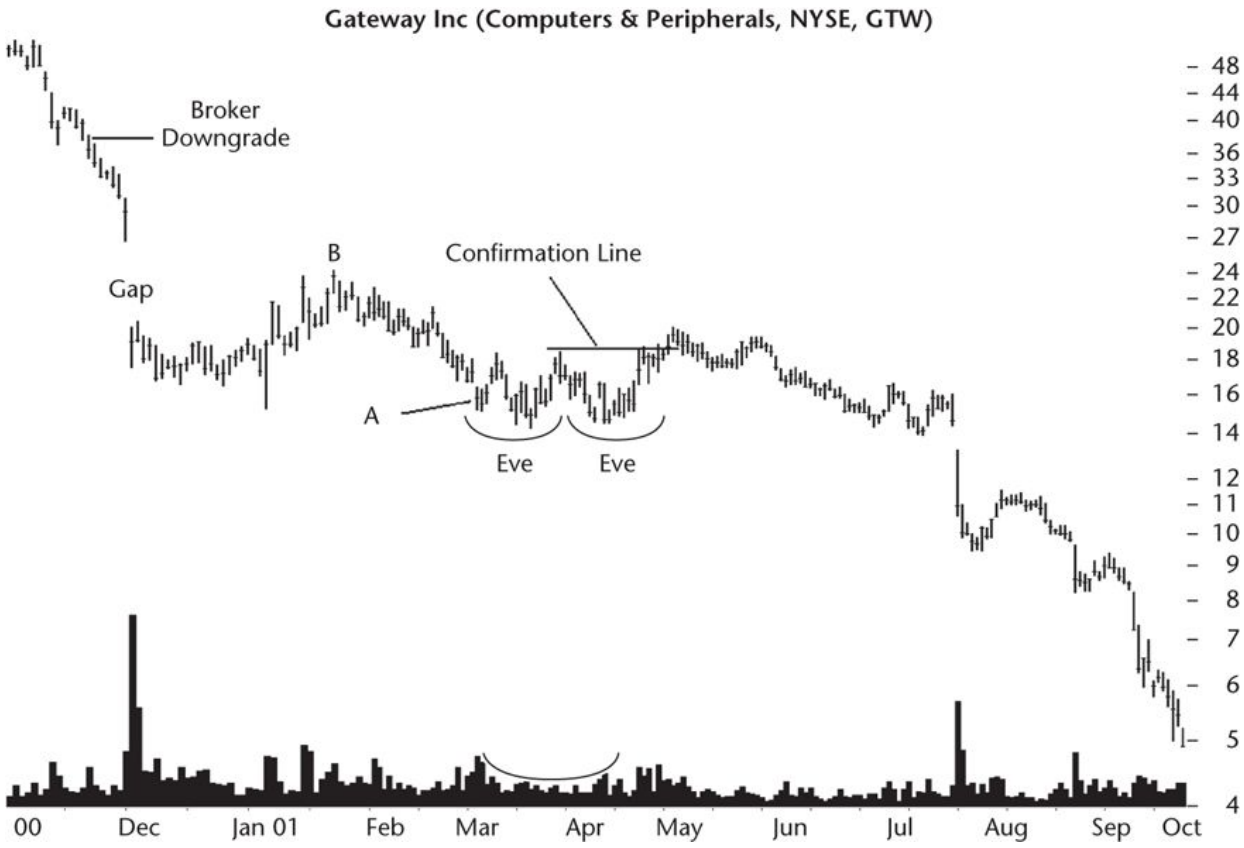


Figure 29.6 Price climbed just 9% after the breakout due to deteriorating fundamentals.

If you bought at the breakout price and sold at the highest high, you would have made 9%, without deducting commissions or other trading costs. My guess is many traders would have lost money, perhaps a lot of it if they rode the stock down.

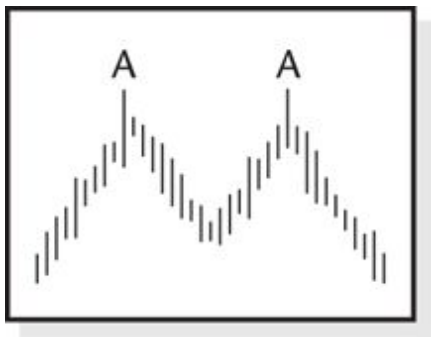
What went wrong? Is this another case of overhead resistance? No. This is a case where the fundamentals take center stage. See that large gap on the left of the chart? Ten days before the gap, a brokerage downgraded the stock. The stock dropped, sure, but it hardly noticed the downgrade.

On November 29, when the market was closed, the company announced that it would not meet its previous sales projections. When the stock opened the following day, price gapped lower (an exhaustion gap), closing 36% below the prior close. In short, the stock dead-cat bounced; the bounce phase was the rounding turn before the double bottom (point B).

A brokerage firm rated the stock “outperform” on the day it gapped lower. Such positive statements after a large down gap help drive the price higher in the bounce phase. However, the dire situation eventually catches the hype and the stock sinks … sometimes dramatically, like that shown here.

Thus, even though we had a valid Eve & Eve double bottom, the fundamentals were screaming *sell*. I do not recommend taking a position in a stock showing a dead-cat bounce for at least 6 months, sometimes even up to a year. Many chart patterns during that time look promising but fail to perform as expected. This is one example.

30
Double Tops, Adam & Adam



RESULTS SNAPSHOT

Appearance: Two well-defined peaks, narrow, pointed, and separated in time but near the same price.

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	19 out of 36
Breakeven failure rate	25%
Average drop	15%
Volume trend	Downward
Pullbacks	64%
Percentage meeting price target	64%
See also	Double Tops, Adam & Eve; Double Tops, Eve & Adam; Double Tops, Eve & Eve

This is the first of four chapters covering the various combinations of Adam and Eve double tops. An Adam & Adam double top is a twin-peak chart pattern, but not just any two peaks will do. Adam peaks are narrow, inverted V's, and sometimes have a long, one-day upward price spike. Volume is heavier on the left top than the right—usually.

The Results Snapshot shows the performance results. The average decline measures 15%, placing the performance rank of 19 out of 36 (where 1 is best). That's almost midway in the list. Pullbacks occur in about two of every three cases.

The “Percentage meeting price target” uses the full height for the measure rule computation. In the Trading Tactics section of this chapter, I give an example of how to use the rule.

Tour

Figure 30.1 shows an example of an Adam & Adam double top. Notice how the twin peaks look similar both in height and width. Price shoots up like a rocket in a one- or two-day spike and then returns to the launch pad. The width at the base of the top is comparatively narrow. The top is not rounded-looking like you see in Eve tops. In a way, each top looks like a hypodermic needle.

The twin-peak pattern becomes a true double top when price closes below the confirmation line (or price). That qualification is important as an earlier study I did found that price continues rising 60% of the time without confirming the twin-peak pattern. Thus, always wait for confirmation unless you have valid reasons for trading earlier.

Volume is usually higher on the left top than on the right. That is what you see here, but it's hard to tell on the chart (I used linear regression for trend analysis so I didn't have to guess).

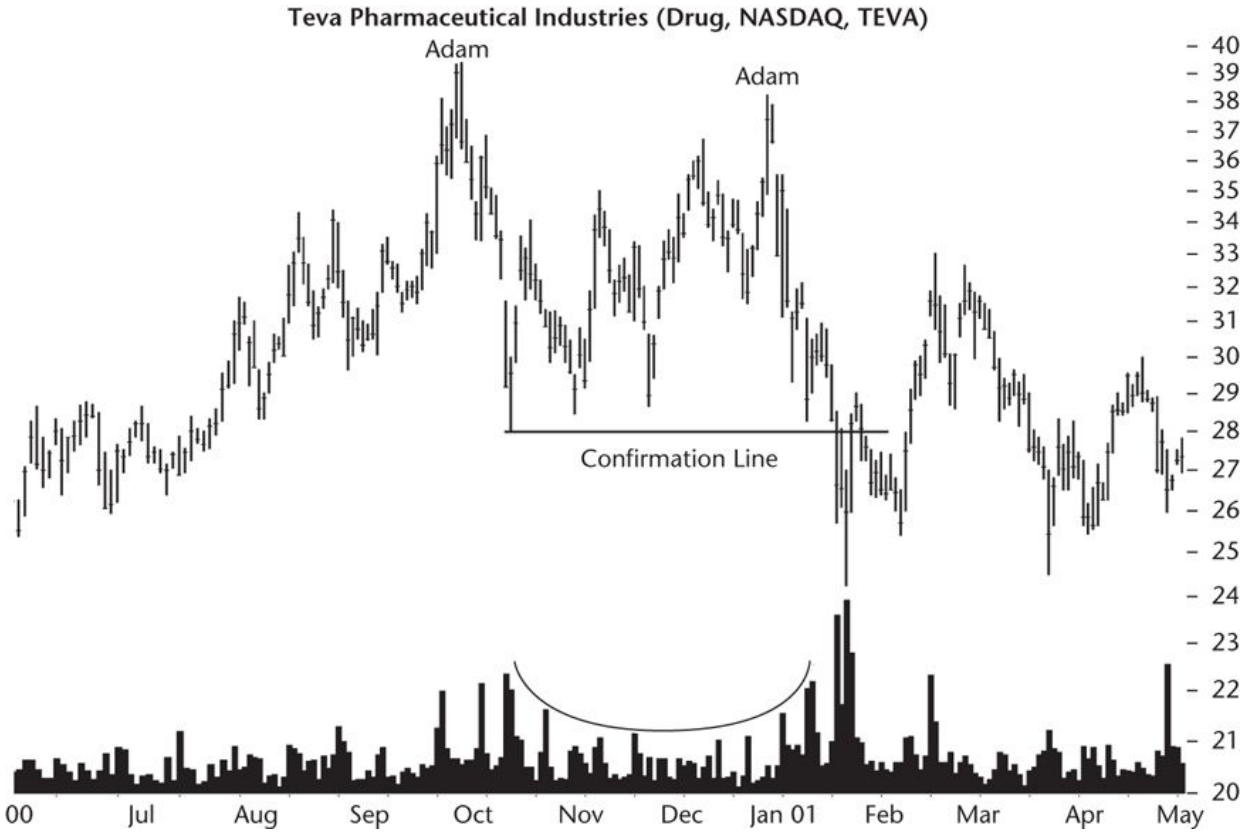


Figure 30.1 An Adam & Adam double top has twin peaks that look similar with narrow spikes.

Identification Guidelines

Double tops are easy patterns to find, but there are guidelines that help. I discuss them in a moment, but first, look at **Figure 30.2**.

The twin Adam peaks look similar and that is key. If they look different, such as one wide and the other narrow, then you have an Eve & Adam or an Adam & Eve top. When they look the same, you have either an Adam & Adam or an Eve & Eve double top. The difference between an Adam top and an Eve top is their width and shape.

Notice how Adam tops are narrow and pointed, looking like an inverted V? Look at the Eve top highlighted in February. See how it appears rounded and wide?

The two Adam peaks confirm as a valid double top when price closes below the confirmation line. The confirmation line is the lowest low between the two peaks. Adam & Adam peaks A and B are not part of a double top because price does not confirm the pattern. Instead, price rises above the higher of the two peaks, invalidating the double top pattern.

Figure 30.3 shows another example of an Adam & Adam double top and an Eve top (not a good one, mind you, but it'll have to do). The Eve top is wide and composed of several short spikes—minor highs—and the group appears rounded. Adam tops are narrow, inverted V's, usually composed of one- or two-day price spikes. Price climbs into the Adam & Adam pattern, forms the two tops, and drops to the confirmation line, validating the double top.

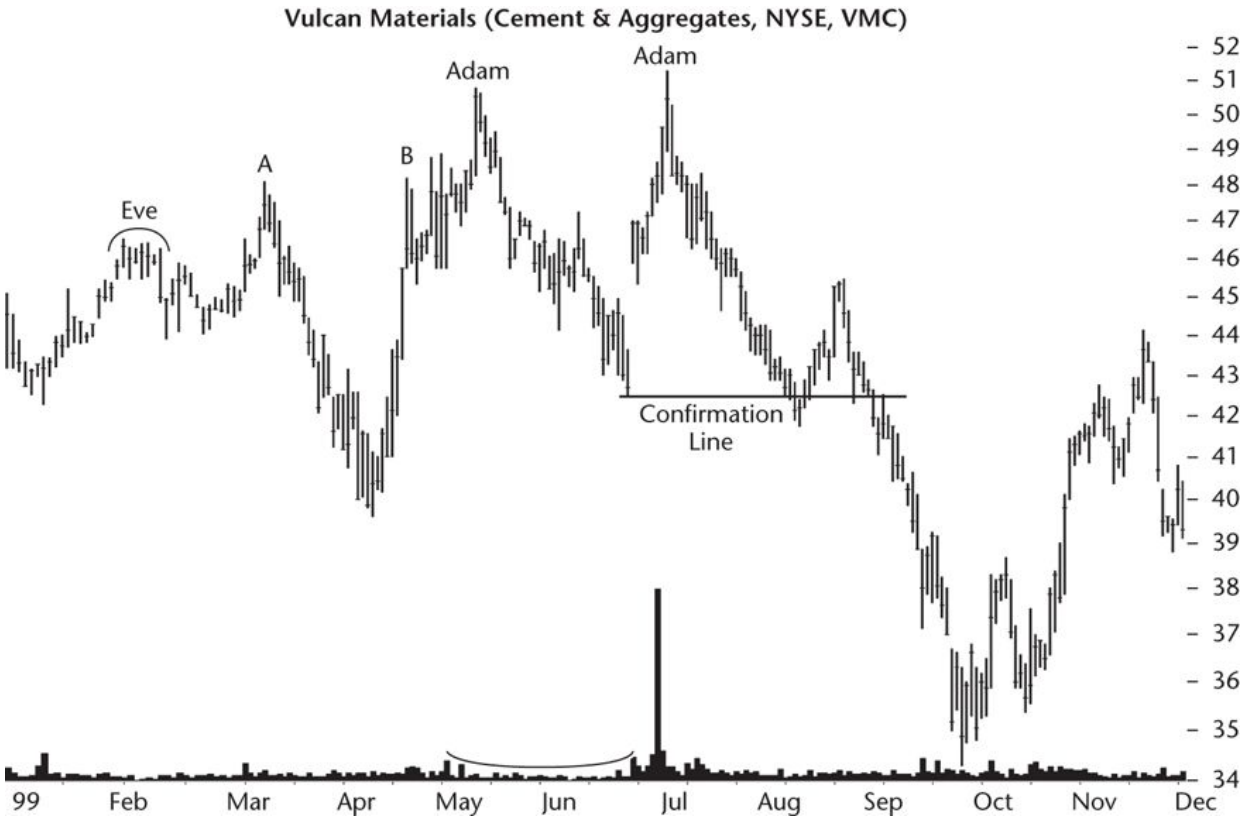


Figure 30.2 An Adam & Adam double top confirms when price closes below the confirmation line. Contrast Adam to the Eve pattern in February.

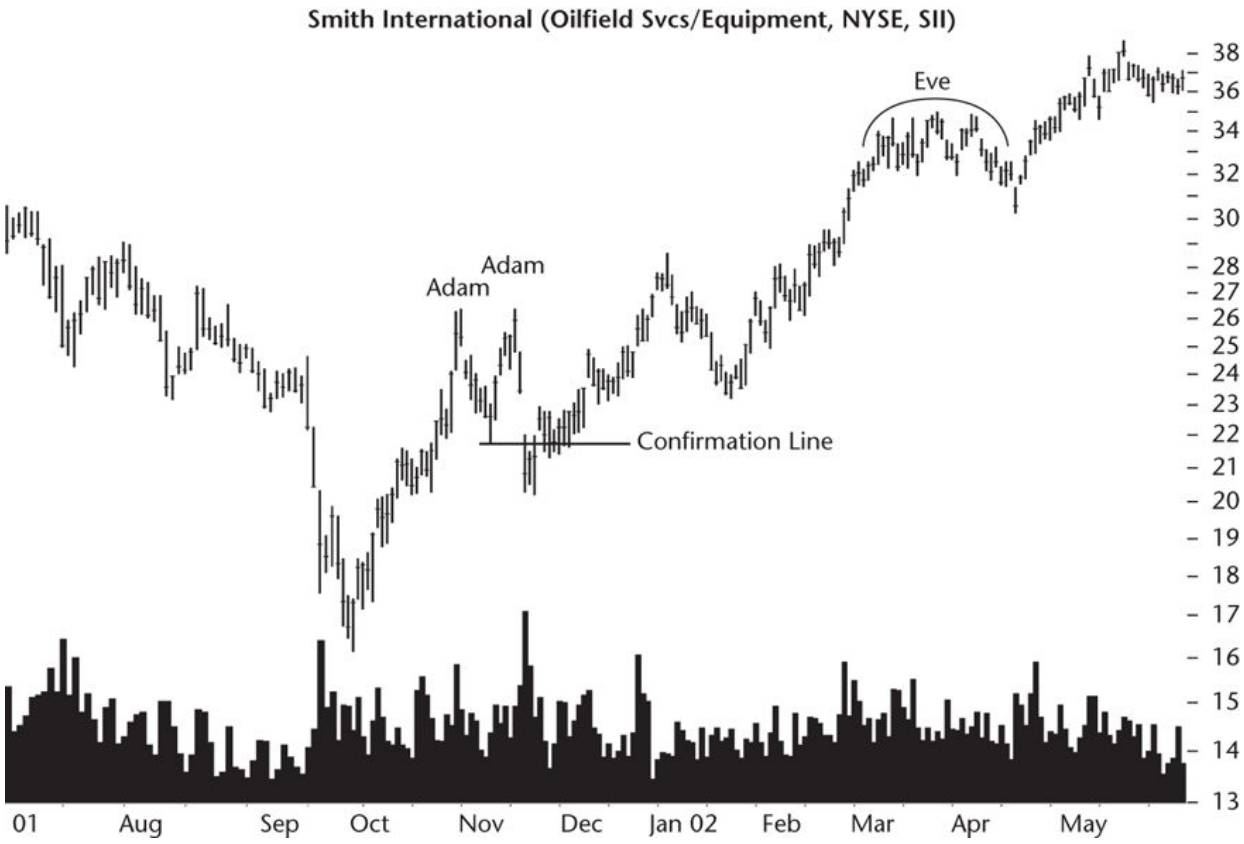


Figure 30.3 Another example of an Adam & Adam double top, but price does not decline far below the confirmation line.

In this example, volume trends upward and that is unusual. Volume is also heavier on the right top if you bracket the peak with 5 days of average volume (2 days to the left to 2 days to the right). Volume is usually heavier on the left peak.

Table 30.1 shows identification characteristics for double tops. Consider **Figure 30.4** as we go through the table.

Appearance. Look for price to climb into a twin-peak pattern. The peaks should top out near the same price. After the double top, price should drop and confirm the pattern as valid.

Price trend. Price must trend upward leading to the pattern to qualify it as a top, not a bottom. The upward price trend can be short, though.

Valley between tops. A dip should separate the two tops, making each top stand out as its own minor high. Do not select patterns that

are part of the same congestion pattern. For this reason, the peaks marked A and B in the figure are not part of a double top.

Top high price. The price difference between the two peaks is usually minimal (the median is 1%). The key is that the two peaks should appear to peak at or near the same price. The two Adam tops shown in Figure 30.4, for example, have a 4% price variation.

Table 30.1 Identification Guidelines

Characteristic	Discussion
Appearance	Adam tops are narrow price spikes, inverted V's. Both should appear similar.
Price trend	Price trends upward leading to the pattern and should not form a third peak, nor should the twin peaks be part of the same consolidation pattern. Look for two distinct minor highs.
Valley between tops	Patterns with a large dip (a tall pattern) perform better than short ones.
Top high price	Top-to-top price variation is small.
Top separation	Tops should be at least a few weeks apart, but be flexible.
Price decline after right top	Price must close below the confirmation price without first rising above the pattern.
Volume	Usually higher on the left top but volume trends downward from peak to peak.
Breakout direction, confirmation	Breaks out downward when price closes below the lowest valley between the two tops. A downward breakout confirms the double top as a valid chart pattern.

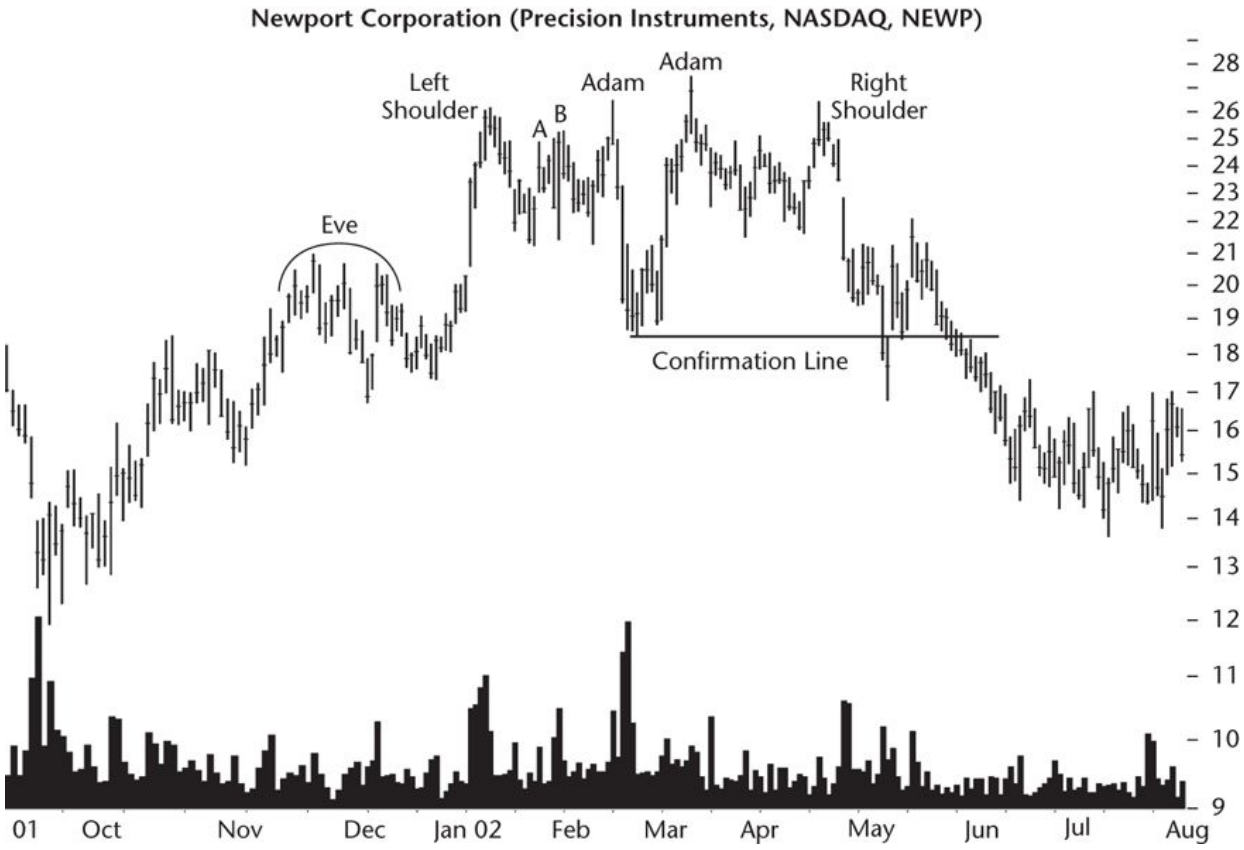


Figure 30.4 An Adam & Adam double top within a complex head-and-shoulders top. The double top acts as a dual head for the complex head-and-shoulders top.

Top separation. How far apart should the peaks be (in time)? Some analysts argue that a month is the minimum, but I put no such limitation on the patterns I selected. However, be sure that the tops are distinct minor highs.

Price decline after right top. The stock must decline to the confirmation price before you consider taking a position unless the situation warrants a quicker move. Sometimes, instead of confirming, the stock forms another peak, forming a triple top. If that happens, treat the pattern as a triple top.

Volume. Volume is usually higher on the left peak than on the right. Linear regression on the volume from peak to peak says it trends lower from left to right.

Breakout direction. A breakout occurs when price closes below the lowest valley between the two tops. The breakout is always down, or

else you're not looking at a valid double top. Wait for price to close below the confirmation line before trading a stock showing a double top.

Focus on Failures

Double tops have two types of failures. The first is one of identification. You must wait for price to close below the confirmation line. Only then does the twin-peak pattern become a true double top. You can try trading the pattern before price drops to the confirmation line, but if you are shorting a stock, you will probably take a loss when price soars away from you. Do the smart thing and wait for price to close below the low between the two peaks before trading.

The second type of failure is what I call a 5% failure. That means price confirms the pattern and then drops no more than 5% below the breakout price before rebounding. It happens more often than I like to see, so be prepared and use a stop to limit the loss.

Consider **Figure 30.5**, a double top that obeys the identification guidelines, including closing below the confirmation level. The uphill run starts in May 1992 (not shown) and peaks in the first top during March 1993, representing a rise of over 60%. Price retraces the gain for a month before gathering steam and trying for a new high. It succeeds at the beginning of June, when price crests the old high by 63 cents.

However, the celebration is short and price tumbles. It drops over 20% before meeting support at 26. The new low is below the double top's valley (between the two peaks), the so-called confirmation price, but the stock quickly turns upward. Price climbs at a smart pace and does not stop until it touches 39 (not shown). That is a 50% bounce off the low. If you sold your shares when price closed below the confirmation level (thinking the stock would continue down), you would have walked away from a chunk of money (that is, holding onto the shares and seeing price rise 50%).

The failure of price to drop more than 5% below the breakout is what I call a 5% failure. Price breaks out downward but fails to descend by more than 5% before turning around. Unfortunately, 5% failures are plentiful for Adam & Adam double tops (ranking 21 out of 36 patterns, where 1 has the lowest failure rate). Speaking of numbers, let's talk about them, shall we?

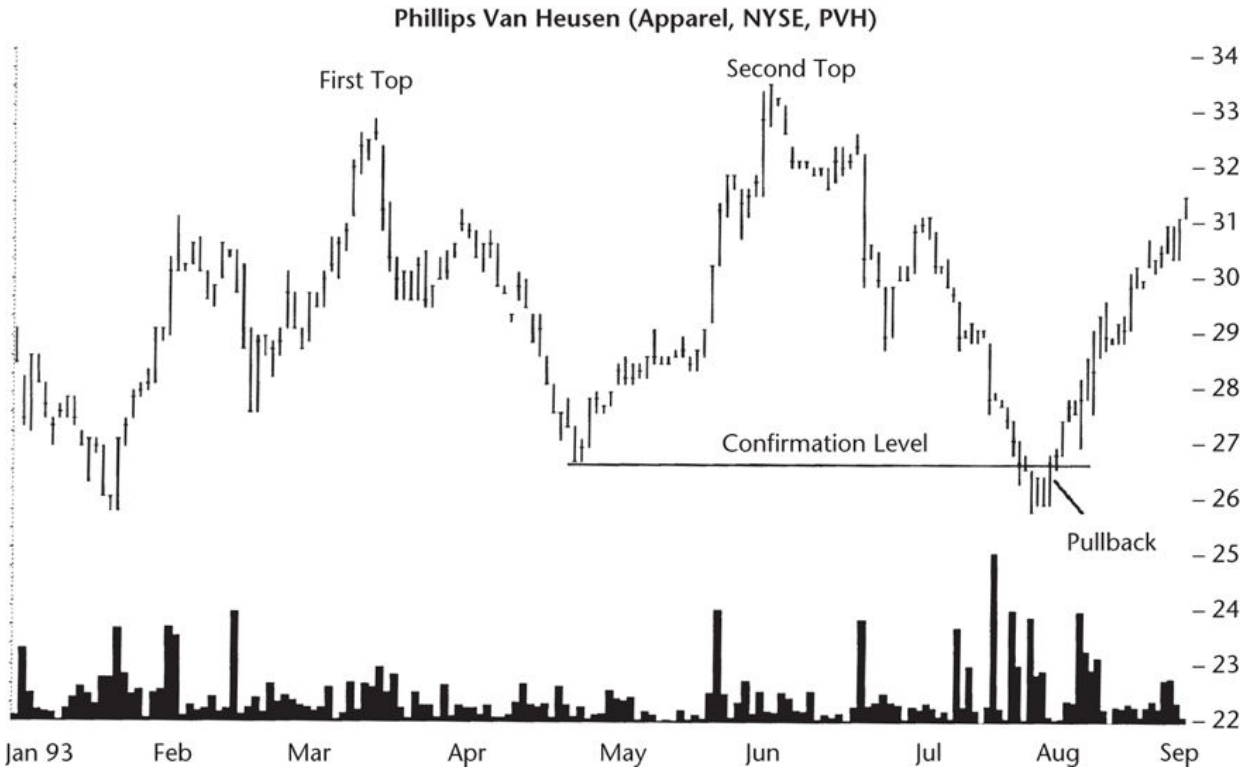


Figure 30.5 A double top pattern that suffers a 5% failure. Price fails to continue moving down by more than 5% before rebounding.

Statistics

Table 30.2 shows general statistics.

Number found. I discovered 1,282 patterns in 656 stocks starting from July 1991 to March 2020. Not all stocks covered the entire period, and some no longer trade. Because few patterns appeared in bear markets, I removed them from this edition. The number found reflects that change.

Table 30.2 General Statistics

Description	Down Breakout
Number found	1,114
Reversal (R), continuation (C) occurrence	100% R
Average decline	–15%
Standard & Poor's 500 change	–4%
Days to ultimate low	51
How many change trend?	28%

Reversal/continuation performance. Since we are dealing with tops and the breakout is downward, all patterns act as reversals of the upward price trend by definition.

Average decline. The average decline measures from the breakout to the ultimate low, which is the lowest low before price climbs more than 20% or closes above the highest peak in the double top.

Standard & Poor's 500 change. Despite including only bull market samples and using the dates of the double top's breakout to ultimate low, the S&P dropped 4%. That decline helped suck price lower. Think of a rising tide lifting all boats. No, that's not right. A receding tide strands fish, so that doesn't sound right, either. I'm sure you can figure out a suitable metaphor.

Days to ultimate low. In other chapters, I found that price drops twice as fast as it rises. So this pattern reaches the ultimate low in about 7 weeks, covering an average drop of 15%. What that means is you can make more money shorting in a quicker period than going long and waiting for price to rise. Of course, it also means you can *lose* money faster.

How many change trend? For *upward* breakouts (from bullish patterns, like double bottoms), I like to see more than half of patterns clear a 20% rise. For downward breakouts (like you see from Adam & Adam double tops), I don't have a good sense of what's a decent number.

If you're going to short a stock showing a bearish chart pattern, then obviously you'll want to see a monster number on this item. It's a tally of how many patterns see price drop more than 20%.

Table 30.3 shows failure rates for double tops. The bull market starts out with a high failure rate (breakeven), and it almost doubles in the next row down. The losses are painful. Let me explain with examples. Twenty-five percent of Adam & Adam double tops fail to see price drop more than 5%. That's a lot. The next row down shows that 46% will fail to see price drop more than 10%. And so on down the list. If you are considering shorting this pattern, then maybe you should reconsider.

Table 30.4 shows breakout-related statistics.

Breakout direction. The breakout direction of choice is downward. How often? All of the time. That's by definition. A breakout occurs when price closes below the lowest valley between the two Adam peaks. As the Identification Guidelines explained, if price doesn't close below the confirmation price, then it's not a double top.

Yearly position, performance. The performance difference for bearish patterns doesn't vary much depending on where in the yearly high–low price range the breakout appears. We see that in the table. It does indicate, however, that you should avoid shorting a stock within a third of the yearly high. Does that advice make sense? Consider that there's a reason a stock is making new highs and another stock is making new lows. You want to short weak stocks (those making new lows for a reason), not those you believe are overvalued and ripe to tumble. A rising price trend can continue longer than you expect, sometimes for years.

Table 30.3 Cumulative Failure Rates

Maximum Price Decline (%)	Down Breakout
5 (breakeven)	275 or 25%
10	237 or 46%
15	171 or 61%
20	123 or 72%
25	84 or 80%
30	74 or 87%
35	55 or 91%
50	62 or 97%
75	31 or 100%
Over 75	2 or 100%

Table 30.4 Breakout and Post-Breakout Statistics

Description	Down Breakout
Breakout direction	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –16%, M –16%, H –14%
Pullbacks occurrence	64%
Average time to pullback peaks	–6% in 6 days
Average time to pullback ends	11 days
Average decline for patterns with pullbacks	–14%
Average decline for patterns without pullbacks	–18%
Percentage price resumes trend	54%
Performance with breakout day gap	–16%
Performance without breakout day gap	–15%
Average gap size	$1.40

Pullbacks. A pullback happens almost two-thirds of the time. That's about the rate we see for both throwbacks and pullbacks, oddly

enough, and that's reassuring (only pullbacks apply to double tops, so don't let me confuse the issue with facts).

It does not take long for the stock to return to the breakout price—11 days on average. When a pullback does occur, it hurts performance, as the table shows. I think that's because the upward curl of a pullback robs downward momentum, eventually hurting overall performance. Don't quote me on that because it's only a guess.

After a pullback completes, price continues to drop 54% of the time.

Gaps. A breakout day gap does give better performance, on average, but not so you'd notice. However, the gap size is painful compared to some other bearish chart patterns with gaps.

Table 30.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones, and the difference for a bearish pattern is surprisingly wide. And that's coming from an author who abhors adverbs.

I determined height from the highest peak in the pattern to the lowest valley between the two peaks. I divided the height by the price of the lowest valley. The results, for all Adam & Adam double tops measured this way, I show as the median in the table. A value above the median means the double top is tall.

Width. Wide patterns perform better than do narrow ones, but the performance difference isn't big. I used the median width as the separator between narrow and wide.

Height and width combinations. The table shows the performance results when combining the height and width traits. Patterns that are both tall and narrow perform best by seeing price decline most after the breakout. The table also shows that you should avoid short double tops.

Table 30.6 shows volume-related statistics.

Volume trend. I used linear regression to determine the volume trend. I found it recedes as measured from the left peak to the right one. However, that's only true 59% of the time, so allow variations. Do not discard a pattern because it has an unusual volume trend.

Table 30.5 Size Statistics

Description	Down Breakout
Tall pattern performance	–18%
Short pattern performance	–13%
Median height as a percentage of breakout price	7.1%
Narrow pattern performance	–14%
Wide pattern performance	–16%
Median width	15 days
Short and narrow performance	–13%
Short and wide performance	–13%
Tall and wide performance	–17%
Tall and narrow performance	–18%

Rising/Falling volume. Double tops with rising volume performed slightly better than did those with falling bottoms, but not so you'd want to stand on the rooftops and yell, “Eureka!”

Breakout day volume. Many traders will swear that heavy breakout volume adds to the reliability of a pattern. Some technicians demand it. But have they proved it?

The table shows what I found, and it's a yawn. Heavy breakout volume *does* help, but only by two percentage points and that's if you trade it perfectly and often enough (over a thousand times).

Table 30.7 shows how often price reaches a stop location. I split the pattern in half but used anesthetic. I found, for example, that a stop placed at the top of the pattern triggered 3% of the time. However, if you were shorting the stock, the stop might be too far away to be tolerable. Perhaps you'd like something closer. If so, the table shows the hit rate for two other locations.

Table 30.8 shows the performance over three decades.

Performance over time. The 1990s showed the best performance, with the other two decades tied for second place.

Failures over time. This is what I like to see, numbers that show a trend. In this case, the failure rates have increased from a low during the 1990s to almost double that in the past decade (the 2010s). *Oops*. That's not really good news for chart patterns, is it?

Table 30.9 shows busted pattern performance.

Busted patterns count. Almost half of downward breakouts will bust. That's huge!

Table 30.6 Volume Statistics

Description	Down Breakout
Volume trend	59% down
Rising volume trend performance	–16%
Falling volume trend performance	–15%
Heavy breakout volume performance	–16%
Light breakout volume performance	–14%

Table 30.7 How Often Stops Hit

Description	Down Breakout
Pattern top	3%
Middle	16%
Pattern bottom	66%

Table 30.8 Performance and Failures Over Time for Bull Markets

Description	Down Breakout
1990s	–17%
2000s	–14%
2010s	–14%
Performance (above), Failures (below)	
1990s	16%
2000s	21%
2010s	27%

Table 30.9 Busted Patterns

Description	Down Breakout
Busted patterns count	488 or 44%
Single bust count	268 or 55%
Double bust count	24 or 5%
Triple+ bust count	196 or 40%
Performance for all busted patterns	22%
Single busted performance	37%
Non-busted performance (Adam & Adam double bottom)	39%

Busted occurrence. I sorted the patterns by how many busts they showed. Single busts came in first place, but triple (or more) busts came in second. That may sound odd, and it is, but other chart patterns show a similar trend.

Busted and non-busted performance. I used Adam & Adam double *bottoms* as the proxy for a non-busted double top (that is, one with an upward breakout—there's no such a thing, hence the substitute). This instance is one of the few cases where the non-busted double bottom beats all combinations (single, double, and triple+) *and* single busted patterns. It suggests that you'd do better trading bullish chart patterns, not bearish busted ones.

Trading Tactics

Table 30.10 shows trading tactics.

Measure rule, targets. Use the measure rule to predict a target price. To use this, subtract the lowest low between the two highs from the highest peak in the pattern and then subtract the result from the breakout price (the lowest low between the two peaks). The result is the target price.

Table 30.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern height from the lowest low between the two tops to the highest peak. Subtract the height from the lowest low. The result is the target price. The target must be above zero and represent a reasonable decline. Use Table 30.3 as a check. The bottom portion of this table shows how often the measure rule works.
Wait for breakout	Wait for a close below the confirmation price before selling.
Trade with market trend	For best results, short in a bear market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and trade if they are showing topping patterns or if their stocks are falling.
Stop location	Consult Table 30.7 for guidance on stop placement.

Description	Down Breakout
Percentage reaching half height target	83%
Percentage reaching full height target	64%
Percentage reaching 2× height	37%
Percentage reaching 3× height	23%

For example, in Figure 30.7, the highest high is the left peak at 35. The lowest low is at 24.88. That gives a height of 10.12. Subtract the height from the lowest low to get a target of 14.76. If the result is negative, then ignore it; price cannot decline below zero.

The bottom portion of the table shows how often the measure rule works. For our full height example, we see price will reach the target 64% of the time. Cut the height in half or use another height, and the probability of success changes.

Consider changing the predicted decline into a percentage, then looking up the failure rate in Table 30.3. In this example, the decline from a breakout of 24.88 represents a loss of 40%. Does that sound reasonable? (Correct answer: No).

Table 30.3 shows that 91% of double tops will fail to drop more than 35% (which is short of the 40% target, of course, but it's closest in the table). Thus, the target price is too far away, and you should choose a more conservative (closer) one.

Wait for breakout. Usually, it is best to wait for the breakout (when price closes below the confirmation line) before trading this pattern. If you do not wait, chances are price will rise 60% of the time (in bull markets) instead of dropping below the confirmation line. The Sample Trade shows an example of how to ignore this rule and make more money.

Trade with market trend. Trade with the market trend for the best results. Since this is a bearish pattern, you will have more success shorting a stock if the general market is also trending down. It need not be in a bear market, because price can rise in a bear market, too. Just be sure price has been trending down (I use 1-, 2-, and 6-month trends in my checks).

Check others in the industry. Other stocks in the same industry can give a vital clue to performance of the stock you want to trade. If other stocks are going down or showing signs of topping, then consider a short sale or selling a long holding.

Look for a stock that turns down first followed by the others. For example, Lowes reports earnings a few days before Home Depot (but this could have changed. I haven't checked in years). When Lowes reported soft earnings, that also hurt Home Depot stock. Home Depot

dropped even more when it reported the same problems (soft lumber prices) and weak results. Look for which stock turns down first, and see what happened the last time they all dipped (perhaps during the same month in prior years: Seasonality).

Stop location. Table 30.7 can help you determine where to place a stop to avoid it being hit while still doing its job to protect your assets. Be sure to change the potential loss into a percentage of the current price to see if the loss is reasonable. If it's not (a stop placed 8% away is common), then select a different location. Don't put it so close that you are guaranteed of being stopped out. A volatility stop can help you decide (see the Glossary).

One person emailed me saying he used a stop that was like 1% away. He was being stopped out for small losses continually. No kidding! He wasn't able to tolerate a larger loss. Don't fall into that trap. Be sensible with stop placement.

Table 30.11 shows special features of the Adam & Adam double top.

Top-to-top variation. Does the price variation between tops suggest better performance after the breakout? Yes! If there's a large variation (more than the median 1%), then performance improves in the double tops I looked at. And the performance differences are wide enough to pay attention to.

Table 30.11 Special Features

Trading Tactic	Performance
Small top-to-top variation	13%
Large variation	17%
Median top-to-top variation	1%
Lower left top	15%
Lower right top	16%

Lower top. This measure is a letdown. The performance difference between which top is lower doesn't make a big performance splash: Just one percentage point. Yawn. A lower right top showing better performance makes sense to me. Why? It tells me the situation is especially weak, that price can't even make it up to the old high.

Experience

Maybe I was trying to be cute and pretended I could pull a rabbit out of a hat with this trade in Phillips Petroleum (now called ConocoPhillips, COP). **Figure 30.6** shows the damage I caused.

The stock made a strong push up to the Adam & Adam double top at AB. The stock confirmed the pattern as valid when it closed below C. That happened at D.

Price behaved itself and slid down to E in a nice strong push before pulling back to F. However, at G, I bought the stock and helped push it higher. Here's my notes for the entry: “16 April 2002. I bought at market, filled at 29.92 [adjusted for stock split]. The book score for the double top is –9, suggesting a weak formation that won't decline more than 12% (the median for AADTs [Adam & Adam double tops]).

“A 12% decline would put the low at 26.74. That could happen as earnings are due out shortly and are expected to be weak. However, it's already been pre-announced, and I believe the stock will recover and return to old highs. I think the worst in refining margins are here now or are already behind us. Also, the ODR (one-day reversal) on 12 April 2002 (E), as far as it appears on my screen, suggests a rebounding stock price as in the February 2002 decline (J). This stock pays a dividend, too, 2.4% at current prices, money markets are at 1.0% now.”

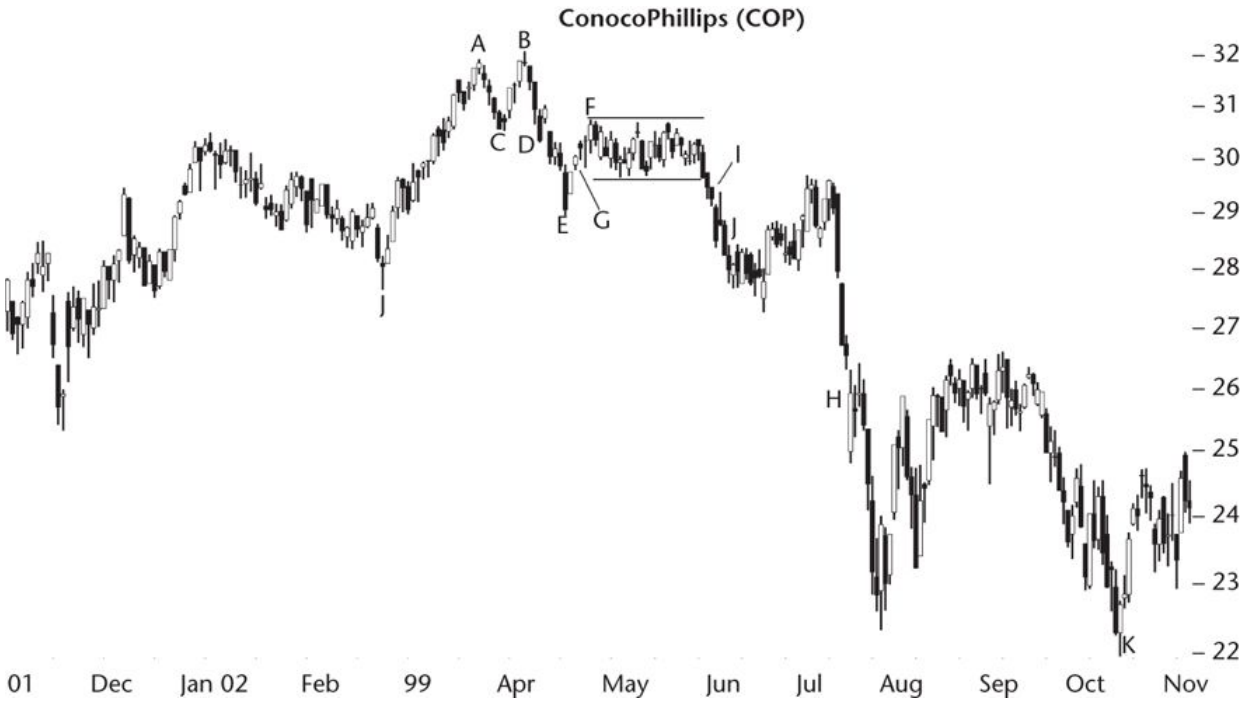


Figure 30.6 The predicted drop from a double top didn't turn into a buy signal.

The book score I'm referring to is from my book, *Trading Classic Chart Patterns* (Wiley, 2002), and it introduced a scoring system for chart patterns.

Price moved horizontally for a time, creating a rectangle top pattern at F (the two horizontal trendlines).

- Lesson: Sell if a chart pattern breaks out downward, especially if the technical and fundamental reasons support a sale.

The rectangle was the perfect exit for this trade and would have saved me money. The correct sell location was I, the day after the downward breakout.

On 3 June (the price bar to the left of J), I wrote more in my notebook: “Support zone at 30 has now been busted through and stock is declining. I don't think it'll hit the median decline for an AADT of 12.4%, to 26.74. I could sell now with a 3% loss. Support is difficult to see in this chart. SAR form thingy [support and resistance page in one of my computer programs] shows best support at 27.50. If

the stock closes below 26.50, then sell it (a 10% loss). Otherwise, collect the dividend."

The notebook entry confirms that I knew about the stock breaking through support, but thought of round number 30 as support).

On 15 July (H), I threw in the towel and sold the stock. "This stock has tumbled along with the market below the stop price, so I sold, filled at 25.81, well below the mental stop price of 26.50. *Ouch*. The refining industry is in the dumps and the market is taking everything down. Even its dividend couldn't support it."

A mental stop is one kept in your head. In situations like a day trade where you need to get in and out fast, mental stops are invaluable. In cases like this trade, not having it in place can mean selling below the exit target.

- Lesson: Use a hard stop (a stop-loss order placed with your broker) instead of a mental stop unless speed is needed.

The lessons in this trade cost me 14%.

Notice the October low at K. That was the bottom for the stock. From there, it climbed all the way up to 95.96, a gain of 436%. I had the right idea about this trade, but my timing was off by about 6 months.

Sample Trade

Since I trade from the long side, let me give you an example of how to use a double top defensively. Say you own the stock in **Figure 30.7**. How do you trade this one? Do you hold on like an amateur investor, or do you dump at the first sign of weakness, like a swing trader?

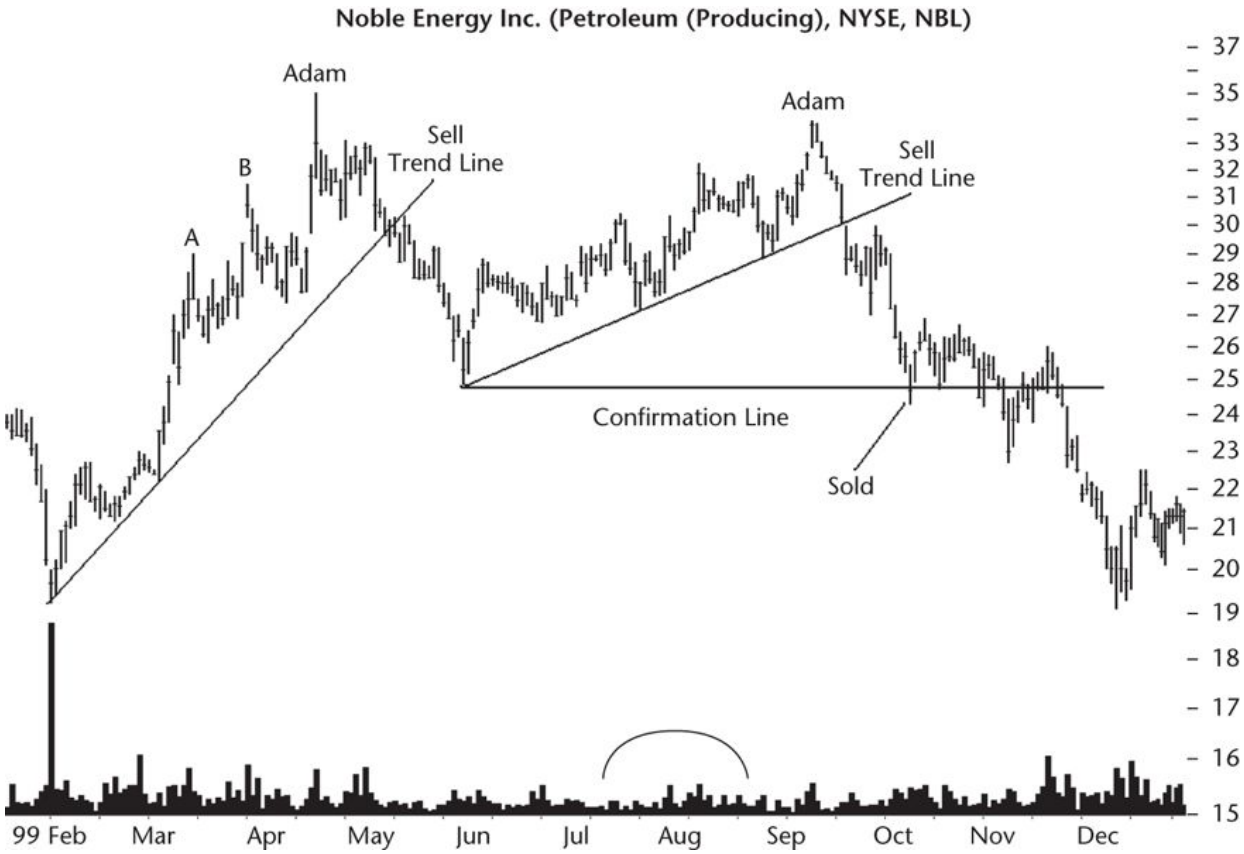


Figure 30.7 The two sell trendlines provide an opportunity to sell the stock at a price higher than the confirmation line.

The answer depends on several factors, such as taxes, industry, and market outlook. Sometimes it may be wise to ride out the decline.

Say you bought the stock at the February low, 19.25. At the first Adam top (35), you made 82%—nearly a double. Watching the stock drop to the confirmation line must have been painful. That drop took price down to 24.88, a decline that reduced your profit to just 29%.

Look what would have happened if you sold the stock the day after price closed below the sell trendline: That would have gotten you out at 29.94 for a profit of 56%.

I recently sold a utility stock because it shot up like the rise to point A. Since a quick decline often follows a quick rise, I was willing to sell my stock for a $7,000 profit plus over $1,300 in dividends because I did not want to give back thousands. I will miss the 5.3% yield at a time when money market funds are paying just 0.3%. The stock has declined since I sold it.

Points A and B are called spikes or tails. Point A is especially good because the price closes near the daily low. That is important. Look for a long price spike with a close near the daily low. For the first Adam peak, if you sold the day after the spike, you would have made 62%. If you sold at the close the day after points B and A, you would have made 55% and 40%, respectively. Those are good gains regardless of how you slice it.

Most amateur investors may have held onto the stock and rode it back down. As it bottomed at the confirmation line, they may have sold (some did as the slight rise in volume suggests). Others held on, vowing to sell if price reached the old high. When price climbed and approached the old high, their tune changed. Their desire to sell melted into greed. “Why sell if the stock is going up?”

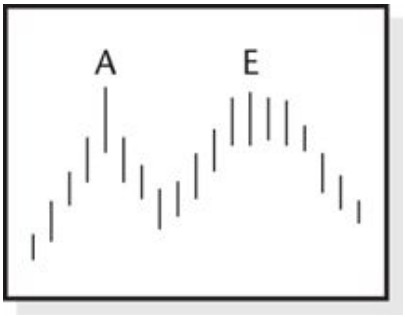
Good point. But you have to sell sometime. Price fluctuations may shake amateurs out or they may turn stubborn and hold on, this time riding the stock down to the confirmation point. That is when the twin peaks turn into a valid double top. That is also the time to sell. Placing a stop-loss order at the confirmation line means your position sells without your having to worry about it.

In this example, a second sell trendline would work well when price closed below it in September. If you sold at the close the following day, you would have made 50%. That is much better than the 29% gain when selling at the confirmation line.

Am I advocating selling before confirmation? No. Every time I have done that in a double top, the stock never confirmed, and I gave up profit because price made new highs. Still, you can increase your profit by taking shortcuts to selling as the example shows (using trendlines, for instance). You can always buy back in if price does not sink to the confirmation price.

The choice is yours. If you are just days away from changing a short-term gain into a long-term one, it may be wise to hold off selling. I did something similar by waiting 3 days to push a trade into a new tax year, shifting income. By delaying, I changed a 40% profit into a 27% one. *Oops*.

31
Double Tops, Adam & Eve



RESULTS SNAPSHOT

Appearance: Two well-defined peaks, the first narrow and pointed, the second wide and rounded; both separated in time but topping near the same price.

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	10 out of 36
Breakeven failure rate	21%
Average drop	16%
Volume trend	Downward
Pullbacks	64%
Percentage meeting price target	54%
See also	Double tops, Adam & Adam; double tops, Eve & Adam; double tops, Eve & Eve

Adam & Eve double tops perform better than average based on the performance rank of 10 where 1 is best. The double-digit breakeven failure rate has a rank of 13 (out of 36, not shown in the Results Snapshot), so it's good, too. If you own the stock in a bull market and it double tops, you might want to sell or not, depending on the circumstances. Sometimes it may pay to weather a small decline after a double top, especially if the general market and others in the industry are soaring.

Tour

Along with the head-and-shoulders pattern, double tops are perhaps the most popular. Many novice investors see a dual peak on the stock chart and proclaim it to be a double top. However, there are a number of characteristics that compose a true double top, and I will discuss them in a moment, but first, what does an Adam & Eve double top look like?

Consider **Figure 31.1**, a double top in ElkCorp. The first thing one notices is the twin peaks. They should top out near the same price and be widely spaced. The price trend leading to the first peak is upward, and price falls away after the second peak. Thus, the double top is a topping pattern and not a bottom.

The intervening valley is just that: a valley that sees price decline by varying amounts (a median of 10%. I measured this). The valley floor forms the confirmation line or price. A twin-peak formation becomes a true double top once price closes below the confirmation price, signaling a downward breakout.

Sometimes a pullback occurs such as that shown in the figure. A pullback allows investors another opportunity to exit their position before the decline resumes (but not in this example, of course, because price climbed). For more aggressive traders, the pullback is a chance to make a short sale in the hope that price will continue falling.

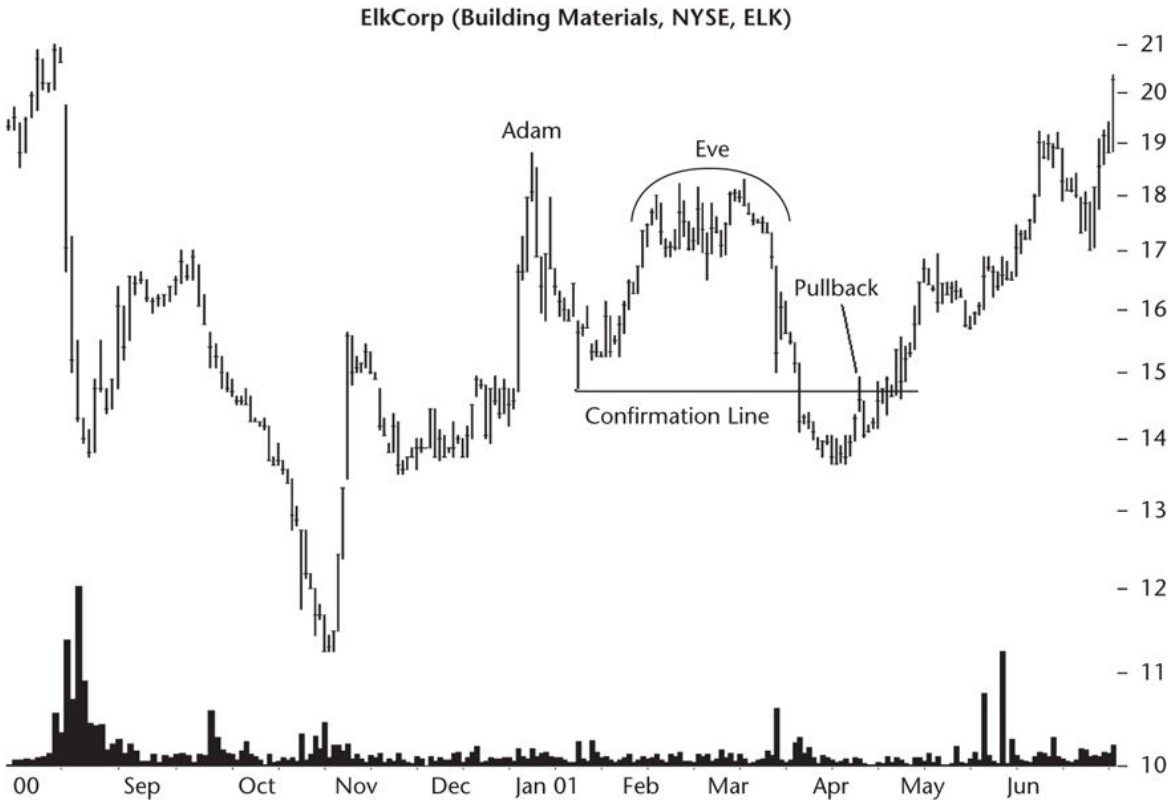


Figure 31.1 A double top has twin peaks that are usually a few months apart but quite near in price. Only when price declines below the valley floor is a double top confirmed as a valid chart pattern.

Identification Guidelines

Table 31.1 lists identification characteristics that Adam & Eve double tops share. They are only guidelines—not rules—and exceptions are many. Consider the double top shown in Figure 31.2 as I run through the guidelines.

Appearance. When searching for an Adam & Eve double top, remember that the Adam peak should look different from Eve. Adam looks like an inverted V, usually with a one- or two-day price spike poking out of the top. Eve tops are rounder and wider looking. Adam peaks come first; Eve, second in this chart pattern.

Price trend. This Adam & Eve double top forms after a short-term price rise beginning in November. The average rise leading to a double top is 98 days, or about 3 months, long.

Valley between tops. I set no minimum price decline between the two tops, just to see if deep dips showed better performance than shallow ones. They do. The median dip is 10%, so allow variations. Figure 31.2 shows a 10% valley decline.

Top high price. The price variation between the two tops is usually small, and some limit it to 3%. I placed no such limitations on the double tops I picked for testing, but they looked as if they peaked near the same price (the median variation is 1%).

Top separation. Some will tell you that tops must be at least a month apart. Again, I placed no such restriction on the patterns I selected. However, the median distance was about 3 weeks as measured between the highest high on each peak. The double top in Figure 31.2 shows peaks 46 days apart.

Table 31.1 Identification Guidelines

Characteristic	Discussion
Appearance	A two-peak Adam & Eve pattern with peaks topping out near the same price. Price rises to the first peak and declines after the second one.
Price trend	Price trends upward leading to the pattern and should not form a third peak, nor should the twin peaks be part of the same consolidation pattern. Look for two distinct minor highs.
Valley between tops	Patterns with a large dip perform better than short ones (median dip is 10%).
Top high price	Top-to-top price variation is small. The median is 1%.
Top separation	Tops should be at least a few weeks apart, but allow variations. The median width is 23 days.
Price decline after right top	Price must close below the confirmation price without first rising above the right top high.
Volume	Usually higher on the left top.
Breakout direction, confirmation	Breakout is downward when price closes below the lowest valley between the two peaks. A downward breakout confirms the pattern as a valid double top.

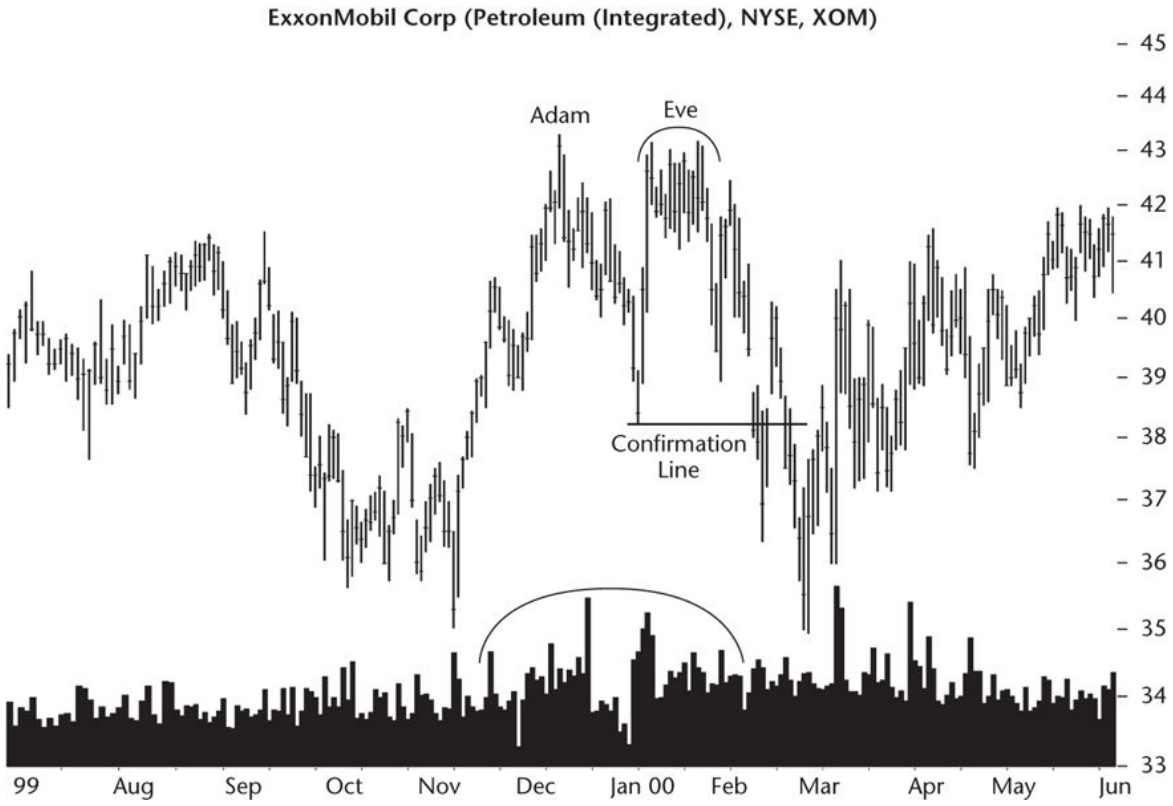


Figure 31.2 An Adam & Eve pattern forms in December and sends price back to the November low.

Price decline after right top. This guideline separates double tops from triple tops. If a third peak forms before confirmation, then ignore the double top and check if it is a triple top. If it is a triple top, then do not trade it as a double top. Common sense, really.

Volume. Volume is usually higher on the left top than on the right as measured by the 5 days surrounding the peak (2 days before to 2 days after). If the right peak has higher volume, do not worry. It happens. The double top in the figure has higher volume on the left peak.

Breakout direction. By definition, the breakout is always downward in confirmed (valid) double tops. A twin-peak pattern becomes a true double top when price closes below the confirmation or breakout price (they are the same).

When confirmation occurs, it might be time to sell a long holding or initiate a short sale. Trading before confirmation may mean price continues rising after the sale. A study I performed said that happens 60% of the time in bull markets. So trading before confirmation may lead to a loss 60% of the time.

Why do double tops form? Consider **Figure 31.3**, an example of a well-shaped double top that satisfies all of the identification guidelines. Volume was unremarkable but did have its moments. On spurts, like that shown during March and again in April, volume spiked upward and buying demand propelled the stock higher.

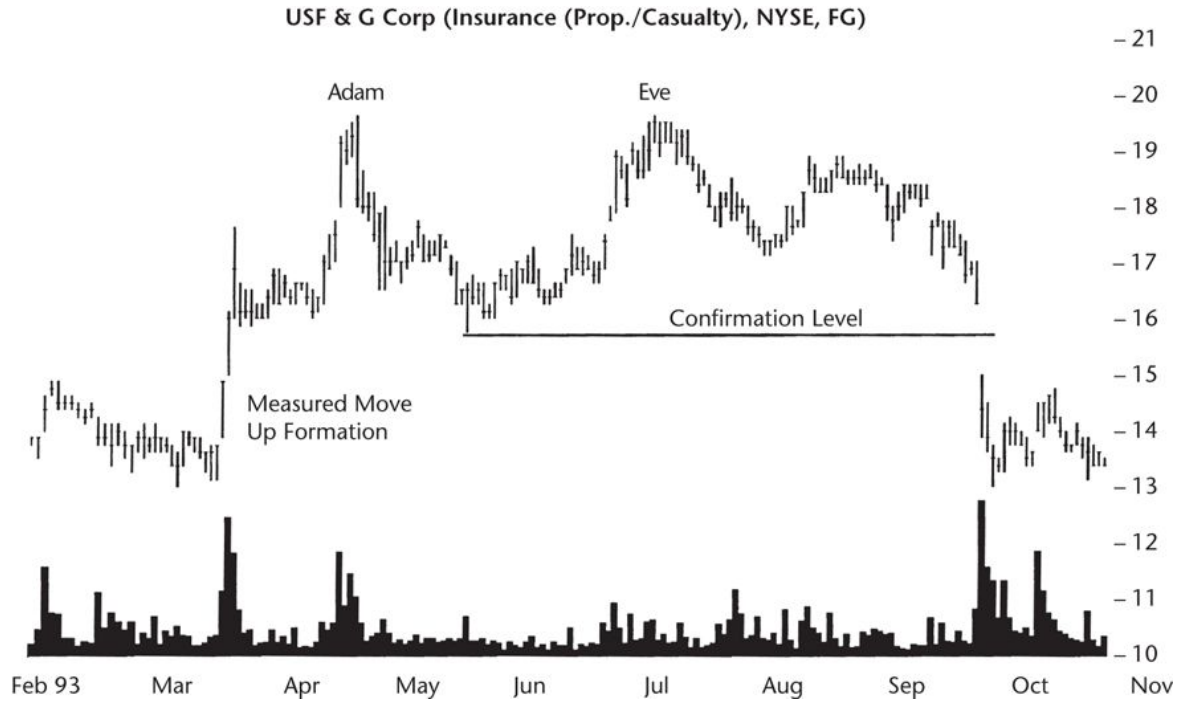


Figure 31.3 Price does not push above this double top for over 3 years. A measured move up pattern forms the rise to the left top.

Unfortunate investors or traders bought near the Adam top hoping price would continue rising—a momentum play. However, astute technical investors recognized the price pattern for what it really was: the completion of a measured move up. The first up-leg occurred in just three price bars, followed by horizontal movement for several weeks and another swift rise to the Adam top.

With measured moves (and the main reason I treasure them), price often returns to the corrective phase (the horizontal movement midway up the pattern). So knowledgeable traders would have expected a drop from the Adam peak and that's what happened. Price formed a base in early May that saw a low of 15.75. The consolidation lasted almost 2 months on light turnover.

The price decline from peak to trough was not much in dollars, but it represented a 20% drop. Comparatively few investors took advantage of the price lull to add to their position or place new trades. Novice traders

who bought at the top probably swore they would sell just as soon as they got their money back.

When price started rising again, traders pulled the trigger and sold their shares as soon as they got their money back. The volume pattern, which up to this point was flat, bumped up and took on a more rugged appearance (during late June and into July). Other traders, believing that the consolidation was over, bought for the first time.

As price rounded over and formed the Eve peak during July, some investors correctly assumed that a double top was forming. They sold their shares near the top, content with the profits they locked in. Other intrepid traders sold short and hoped price would fall. Price *did* fall but found support (in August) at the top of the horizontal price move located between the two double top peaks.

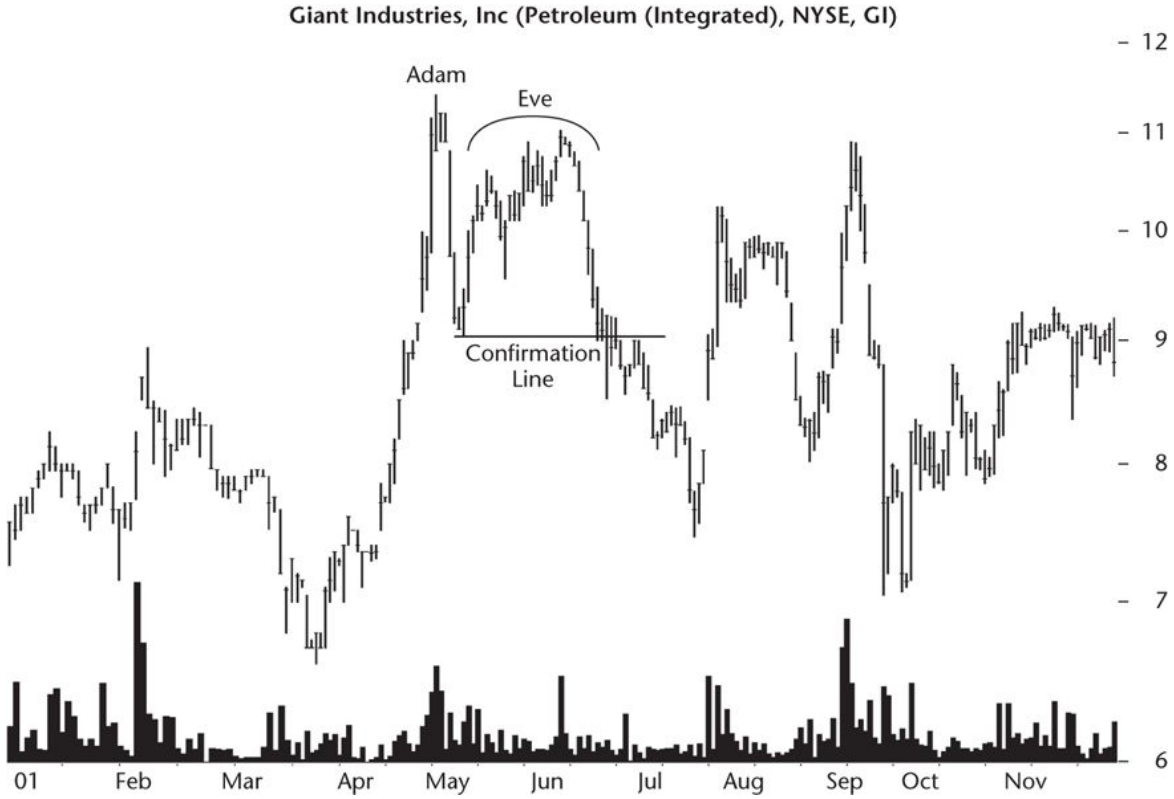


Figure 31.4 This Adam & Eve double top shows the difference between each peak's width.

After a prolonged attempt at creating a third peak in late August and into September, price gapped (continuation gap) below the confirmation point at 15.75. Price broke out downward. The smart money sold their shares immediately and licked their wounds. Others hoped the selling was overdone while still others sold short.

The stock attempted a pullback in mid-October but gave up. For the next several years, price failed to rise above the high established by the double top.

Figure 31.4 shows another example of a double top. The Adam peak does not have a long, one-day price spike. Rather, the peak is narrow when compared to the Eve counterpart. Look at the width of each peak near the confirmation line, and you will see what I mean. If the top shape does not make it easy to identify the pattern, look at the base's width—sometimes that helps. At the confirmation line, the Adam peak remains narrow but Eve remains wide.

Focus on Failures

Figure 31.5 shows a typical failure of an Adam & Eve double top. Let's run through the identification guidelines to see if we have correctly identified the chart pattern:

Price trend: Price rises from the December low (H) to the Adam top. Check.

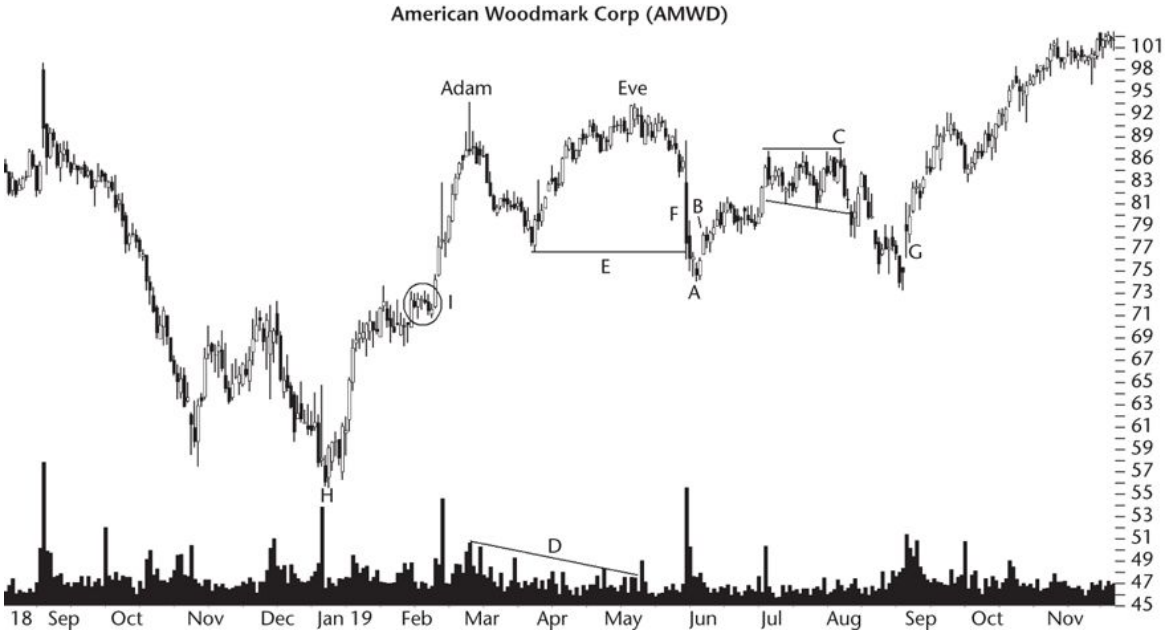


Figure 31.5 Price after the breakout from this Adam & Eve pattern fails to drop far.

Valley between tops: Price drops after Adam and turns up to reach the Eve peak. The dip from Adam (the higher of the two peaks) to confirmation at E is 20%, which is plenty deep.

Top high price: The price difference between the two peaks is minor: 0.2%. The stock *looks* like it's peaking near the same price.

Top separation: The distance between the two peaks is 70 days, which is fine.

Volume: Linear regression says volume is receding from peak to peak, that is, it's higher on the left than on the right. I drew line D to show this.

Breakout direction: It's downward, as required.

Confirmation: Price closes below confirmation line E a day after touching it.

Every one of the above checks passes the guidelines set for the pattern. So what went wrong?

Price broke out downward and made it to A. A pullback happened that returned price back to B (meeting the breakout price). A pullback is typical, and they happen 64% of the time. This one made the journey back in just 4 days instead of the usual 12, and the stock didn't drop far below the breakout, either (5.2%, which is close to the predicted average of 6% for a pullback).

After price reached B, the breakout price, it kept rising up to C. At C, a right-angled broadening and descending pattern completed with a downward breakout.

This sent price back down to approach the bottom (E or A) of the double top again. After that, the stock climbed and closed above the top of the pattern. When that happened, price busted the downward breakout. The drop from E (confirmation) to A was slightly above the maximum price of a 5% failure. So technically it wasn't a failure, but I would have hated to have shorted this stock, or sold a long holding, expecting a steep decline.

A check of the fundamentals shows that the company announced earnings at the Adam peak. You can see how the market reacted to that announcement (the stock dropped for a month). The large drop (F) that took the stock down to E, the confirmation line, was because of the next earnings announcement.

The market interpreted as good news the next earnings announcement at G. The stock gapped higher (a breakaway gap) and soared thereafter.

I didn't see any news posted on the company website that explained why the stock turned higher at A. Apparently, the earnings report wasn't as bad as shareholders thought or maybe optimism expressed about the future during the conference call (I'm speculating here because I didn't check) helped convince people to buy the stock and halt the decline.

I will say that in my trading, I usually ignore double tops. Why? Because the typical decline is meager. As I have aged, it makes more sense for me to invest in a diversified portfolio instead of doing lots of trading. I no longer need to day or swing trade when I can be riding my bicycle and making thousands. I will assess each situation. If it looks dire, where I would expect a huge loss, then I'll sell.

In this figure, find point H in December. I consider this the launch price for the double top pattern. If I were looking at the stock the day after F (the breakout) and seeing the large drop after the earnings announcement,

I'd be afraid the stock would continue lower, retracing most of its gains down to H (as a worst-case scenario).

Statistics

Table 31.2 shows general statistics.

Number found. I found 784 Adam & Eve double tops in 533 stocks from July 1991 to February 2020. Not all stocks covered the entire period, and some no longer trade. I consider this chart pattern rare. Of the four combinations of Adam and Eve double tops, this one has the fewest bull market samples. Because it's rare, bear market samples are too few to show, so the number found is for bull markets only.

Reversal (R), continuation (C) occurrence. Since we are dealing with double tops and downward breakouts, all patterns act as reversals. That means price enters the bottom of the pattern going up and the breakout is downward, reversing that uptrend.

Average decline. The average decline is slightly better than the other three combinations of Adam and Eve double tops. It's even better than the 15% average for all chart pattern types (not just Adam and Eve varieties).

Table 31.2 General Statistics

Description	Down Breakout
Number found	651
Reversal (R), continuation (C) occurrence	100% R
Average decline	–16%
Standard & Poor's 500 change	–4%
Days to ultimate low	53
How many change trend?	30%

Table 31.3 Cumulative Failure Rates

Maximum Price Decline (%)	Down Breakout
5 (breakeven)	135 or 21%
10	144 or 43%
15	99 or 58%
20	77 or 70%
25	53 or 78%
30	44 or 85%
35	43 or 91%
50	40 or 98%
75	15 or 100%
Over 75	1 or 100%

Standard & Poor's 500 change. Using the dates of the breakout to the ultimate low, we see that the S&P 500 dropped an average of 4%. Maybe that drop explains the slightly better performance for this pattern. The falling market helped drag down stocks.

Days to ultimate low. It takes about 7 weeks from the breakout to reach the ultimate low, on average. The median is half that, though, or 27 days. That may assist you in the timing of the decline for your situation.

How many change trend? This is a measure of how many patterns see price drop more than 20%. The higher the number, the better. Comparing the rank of the result shown in the table says that this double top is in the top third of the list: 11 out of 36. That's quite good.

Table 31.3 shows failure rates. One in five trades (21%) will see price fail to drop more than 5% after the breakout. That rate doubles to 43% for patterns failing to drop more than 10%. Is it any wonder that I no longer fear seeing a double top?

Keep this table in mind if you decide to short a stock. The decline may be less than you think. If you own a stock, check this table for the likely decline. Is it worth holding onto the stock and weathering the decline? Only you can answer that.

Table 31.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is downward. As you know, a breakout occurs when price closes below the lowest valley

between the two tops. If price closes above the top of the pattern first, then you don't have a valid double top.

Yearly position, performance. Price drops farthest if the breakout is within a third of the yearly low. Avoid those with breakouts near the yearly high. Although that may sound strange, shorting a stock making new highs can be a disaster. You want to hunt down weak situations in stocks making new lows.

Pullbacks. Pullbacks occur almost twice every three times. When they do occur, price takes 12 days to complete the journey back to the breakout price. However, a pullback hurts performance.

For example, double tops with pullbacks declined 15%. Without pullbacks, price declined 17%. This finding suggests you should search for underlying support before investing. If you are considering shorting the stock and the decline stops in the support zone, would that warrant the risk of a trade?

Price resumes the downward trend just over half the time.

Gaps. The appearance of a breakout day gap suggests better performance, but not so you'd notice.

Table 31.5 shows pattern size statistics.

Table 31.4 Breakout and Post-Breakout Statistics

Description	Down Breakout
Breakout direction	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –17%, M –16%, H –15%
Pullbacks occurrence	64%
Average time to pullback peaks	–6% in 6 days
Average time to pullback ends	12 days
Average decline for patterns with pullbacks	–15%
Average decline for patterns without pullbacks	–17%
Percentage price resumes trend	55%
Performance with breakout day gap	–17%
Performance without breakout day gap	–16%
Average gap size	$0.74

Height. Tall patterns perform better than short ones after the breakout. To use this finding, compute the height of the double top from the tallest peak to the lowest valley between the two peaks. Divide the height by the price of the lowest valley between the two peaks. If the result is greater than the median shown in the table, then you have a tall pattern.

Width. I didn't see any performance difference between wide and narrow patterns, but I will say that wide patterns tend to perform better than narrow ones in many other chart pattern types.

Height and width combinations. As one would expect, tall patterns outperform short ones regardless of whether they are wide or narrow. The numbers say to avoid short and wide patterns.

Table 31.6 shows volume-related statistics.

Volume trend. The volume trend from peak to peak is downward, which I found using linear regression.

Table 31.5 Size Statistics

Description	Down Breakout
Tall pattern performance	–17%
Short pattern performance	–14%
Median height as a percentage of breakout price	11.4%
Narrow pattern performance	–16%
Wide pattern performance	–16%
Median width	23 days
Short and narrow performance	–15%
Short and wide performance	–14%
Tall and wide performance	–17%
Tall and narrow performance	–18%

Table 31.6 Volume Statistics

Description	Down Breakout
Volume trend	72% down
Rising volume trend performance	–15%
Falling volume trend performance	–16%
Heavy breakout volume performance	–16%
Light breakout volume performance	–16%

Rising/Falling, breakout day volume. There's not much performance difference if volume is rising or falling, or if the breakout day volume is heavy or light.

Table 31.7 shows how often price reaches a stop location. I divided the double top in half and found how often price climbed on its way to the ultimate low. That may sound odd, but I wanted to know where to place a stop.

Sticking it at the top of the pattern will see price trigger the stop 1% of the time, but the distance between your entry price and the stop location might be huge. So not only determine the best place for the stop, but check to be sure you can tolerate such a loss.

Table 31.8 shows the performance over three decades.

Performance over time. The 1990s showed the best performance, handily beating the other two decades. So if you have a time-travel machine and can go back to the 1990s, you'll know what to expect.

Failures over time. Failures (5% failures) have grown steadily worse over the last three decades. It makes me wonder what the future will bring. Can I borrow your time machine to check? You're probably telling me that there's no future in time travel, but I digress.

Table 31.9 shows busted pattern performance.

Busted patterns count. Almost half (40%) of double tops will bust. That's painful if you are expecting a significant decline.

Table 31.7 How Often Stops Hit

Description	Down Breakout
Pattern top	1%
Middle	16%
Pattern bottom	71%

Table 31.8 Performance and Failures Over Time for Bull Markets

Description	Down Breakout
1990s	–19%
2000s	–14%
2010s	–14%
Performance (above), Failures (below)	
1990s	12%
2000s	19%
2010s	26%

Table 31.9 Busted Patterns

Description	Down Breakout
Busted patterns count	258 or 40%
Single bust count	153 or 59%
Double bust count	15 or 6%
Triple+ bust count	90 or 35%
Performance for all busted patterns	32%
Single busted performance	52%
Non-busted performance (Adam & Eve double bottoms)	43%

Busted occurrence. Most of the double tops that bust do so only once. In second place is a triple bust (triple+: really three or more busts).

Busted and non-busted performance. I compared the performance of busted double tops with Adam & Eve double *bottoms*. Single busted tops beat the performance of double bottoms. "All busted patterns" means the performance combination of all busted types: single, double, and triple+ patterns.

If you can find a busted double top, consider trading it, especially if you believe it'll single bust.

Trading Tactics

Table 31.10 shows trading tactics for double tops. They are similar to other double tops.

Double tops serve three purposes. One is to get you out of a long holding. The second is to trigger a short sale. The third is to scare the daylights out of you. Before we get into a sample trade, let us review the basics.

Measure rule, targets. Use the measure rule to help predict how far price may decline. Determine the pattern's height and subtract it from the breakout price. The result is the target.

For example, look at Figure 31.6. The highest high in the Adam & Eve double top is at 28.72, on the Eve top, and the lowest low (the confirmation line) is at 25.78. Subtract the difference (2.94) from the valley's low (25.78) to get a target of 22.84. Price passed the target on the way down to C.

The lower portion of the table shows how often price reaches targets based on various heights. The full height target, as used in the above example, reaches its target just over half the time. You may wish to cut the height in half to boost the success rate to 79%, but know you're also cutting potential profit (because the target will be closer).

Once you know how far price might decline, you can check your work using Table 31.3. For example, the decline (above) of 2.94 in a stock trading at 25.78 (the breakout price or use the current price) is 11%. Table 31.3 says that 43% of the stocks will fail to drop more than 10%. Will a 43% failure rate persuade you to look elsewhere?

Table 31.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern's height from tallest peak to valley low (between the two peaks). Subtract the height from the breakout price to get a target. Ignore values below 0. Big declines will be unrealistic. Use Table 31.3 for a reality check. The lower portion of the table shows how often the measure rule works.
Wait for breakout	Wait for a close below the confirmation point before selling—usually.
Trade with market trend	For best results, short in a bear market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and go short if they are showing topping patterns or if the stocks are falling.
Stop location	Consult Table 31.7 for help with locating a stop.
Busted trade	Trading a single busted double top can be rewarding.
Tips	See text.

Description	Down Breakout
Percentage reaching half height target	79%
Percentage reaching full height target	54%
Percentage reaching 2× height	26%
Percentage reaching 3× height	15%

Wait for breakout. As a trading signal, you will want to wait for the breakout before exiting a long position or opening a short sale. The breakout price is the lowest low between the two tops, shown in Figure 31.6 as the confirmation line. If you sell your shares before confirmation, there is a 60% chance that price will not decline to the confirmation line but will instead move higher (I conducted a study to determine this). Once price closes below the breakout price, sell your shares or consider shorting

the stock. However, the decline after many double tops isn't big, so I don't recommend going short (or in many cases, selling a long holding).

Trade with market trend. If you own shares in a bull market, look for underlying support and see if you can tolerate a loss to that level. With the bull market powering price upward, the downturn may be minor. In a bear market, that is the time to short a stock showing a double top. Trade with the market trend for best results.

Check others in the industry. If other stocks in the same industry are showing weakness (moving down or forming bearish chart patterns), then consider selling your stock. You might even want to sell before the breakout, but in a bull market, that may leave profits on the table when the price recovers before confirmation. In a bear market, it is a safer bet. Remember, you never go broke taking a profit.

Stop location. Table 31.7 gives the probabilities of a stock reaching one of the stop locations as price seeks to find the ultimate low. Consult the table for guidance.

Busted trade. In Table 31.9, I said that single busted Adam & Eve double tops outperformed the non-busted double bottom. Because a busted double top is easy to spot, you might consider going long after one appears. Look for overhead resistance and underlying support to help determine if the pattern will single bust (good luck with that).

Tips. Let's pretend that I enjoy shorting stocks. Here are some tips to make your life easier. In the first series of tips, look for a strong push upward leading to the Adam top, not a trend that meanders and rollercoasters for months before forming the double top.

When I write of a *knot*, Figure 31.5 shows an example of what I'm blabbering about. You'll see it at I, circled in the figure. Price moves sideways for at least 3 days with lots of price overlap. It's in the line of trend leading up to the Adam peak, and it's the closest support knot below confirmation. That's the target. Price at A almost reaches that knot and reverses.

- In your trade, look to the left of the Adam peak where price trends up to the double top. If the stock *at confirmation* is resting on a knot of support, then don't take the trade. Expect the stock to bounce off that knot and maybe bust the downward breakout. It's too high risk to short the stock.
- Look for the first knot of support *below confirmation*. The top of that knot is your price target. Price will often drop to the top of that area

right after a breakout and reverse there. It's a good time and price to close out the trade.

- If the knot of support is well down the price trend (such as when price makes a swift rise up to the double top), the stock likely won't make it back down to the knot, at least not in the first few days. Measure the move from the knot to the confirmation price and divide by three or maybe half, then subtract the result from the confirmation price. That's your target.
- Figure 31.4 shows an example of this strong move up to the Adam peak. There's no support area (no place where price goes horizontal for 3 or more days) along that run, so slice the height of the run in half or thirds and measure down that far from the confirmation price as your target.

  Table 31.11 Special Features

Trading Tactic	Performance
Small top-to-top variation	15%
Large variation	17%
Median top-to-top variation	1%
Lower left top	16%
Lower right top	15%

- Sometimes price will bottom in an irregular fashion (before the Adam peak), with several valleys touching an up-sloping trend. Connect those valleys with a trendline. That's your target. This works with a loose-looking up-and-down movement that's quite wavy but seems to bottom along the trendline. That trendline, extended into the future, is a support area where the stock will drop and reverse. This setup is rare, but I've seen price hit the trendline and reverse there.

Table 31.11 shows special features of the double top.

Top-to-top variation. Does the price difference between the highest high in each top indicate better performance after the breakout? Yes! Is it a big difference? No!

I found that when the price difference between the two tops was greater than the median, performance improved but only slightly as the table shows.

Lower top. If the left top is lower than the right, performance improves but only marginally. The difference is probably not statistically significant.

Sample Trade

Figure 31.6 shows a sample trade in an Adam & Eve double top and serves as a tutorial for using progressive stops to protect profits.

The Adam top is narrow and composed of a one-day price spike. Eve is wider and more rounded-looking. When price closes below the confirmation line, the twin peaks become a valid double top. How will this pattern perform?

The first thing to notice is that this double top occurs in a bull market. That suggests a smaller decline than if it were in a bear market. The S&P 500 index had just reached a new high on 7 October, but was easing lower on the breakout day (16 October). The five stocks in the apparel industry that I follow all made highs in October 1997, and by the confirmation date were trending downward. That was a good indication that the stock should be sold (if you owned it).

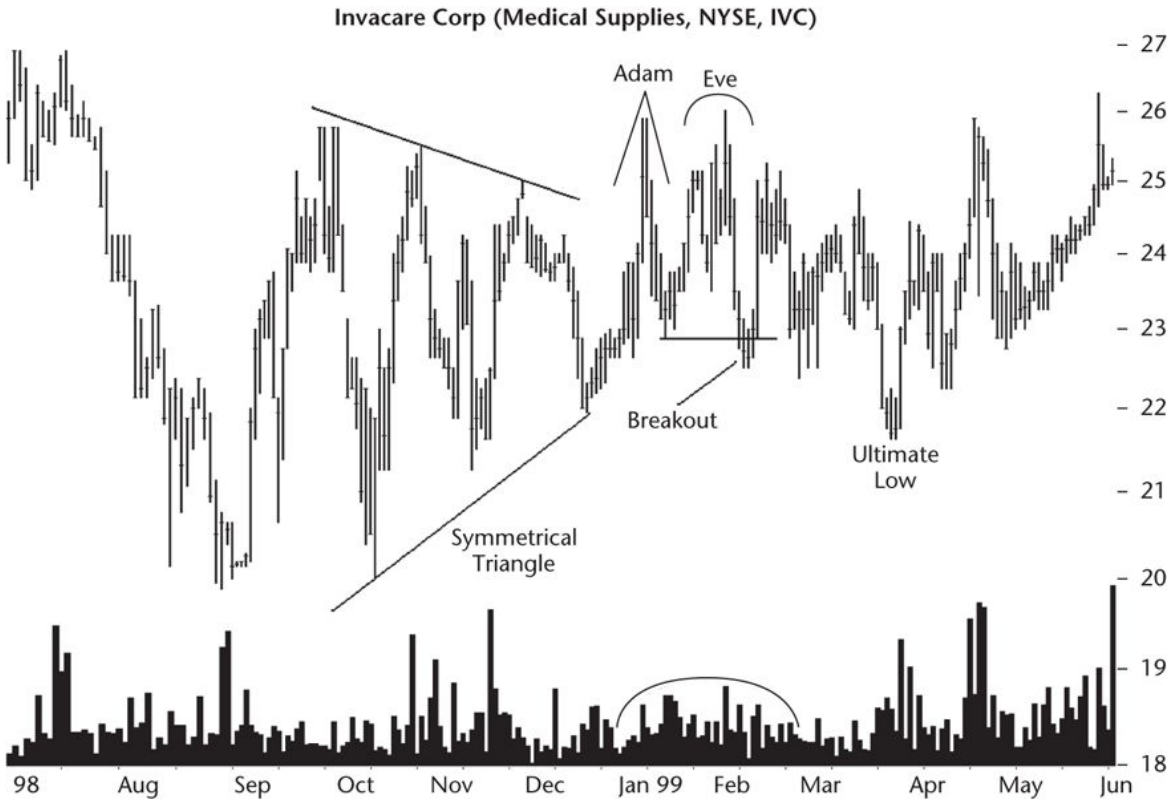


Figure 31.6 To use the measure rule, compute the height of the double top and subtract the result from the confirmation line. Price hits the target on the way to C in this example.

The Eve peak sets the yearly high, and Table 31.4 says that the worst performance comes from breakouts within a third of the yearly high. That

observation sounds a note of caution.

The support line set up by the ascending triangle in June suggested that price would have a difficult time piercing it. Thus, expect a pullback. Table 31.4 shows that a pullback hurts performance, but the difference is small.

Is the double top tall? The height as a percentage of the breakout price measures 11.41, just under the 11.44% value for a tall pattern. The pattern is short, suggesting underperformance.

Is the pattern narrow? Yes. The pattern is 16 days wide (as measured between the highest high in each top). Pattern width makes no difference for this chart pattern.

Which peak is lower? The Adam peak is lower than Eve, and Table 31.11 says that there is a small performance boost (one percentage point) for that combination.

This analysis showed mixed technical evidence (which is typical). If you owned the stock, you could sell on the breakout. Waiting for a pullback is a risk because they occur 64% of the time, but with underlying support by the ascending triangle, a pullback was a good bet.

If you wanted to short this stock, the timing is the same. Short at the breakout and add to your position if price turned downward after the pullback completed, or just short when price dropped again after the pullback.

Say you short the stock at the breakout. Price pulls back, then drops to point A. Since that is a new minor low, place the stop a dime or so above the top of the pullback, the closest minor high. Price climbs to B, then drops to C. C is lower than A, so it is a new minor low. Lower the stop to B. Price climbs to D, then drops to E. Move the stop to D. Since the drop from D to E is far, you might want to cut the distance to the next stop location.

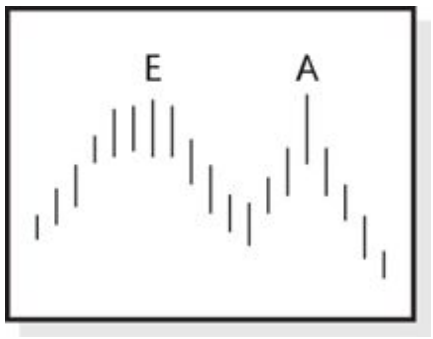
Keep moving the stop lower as price drops. A new low on the way to H means the stop is lowered to F. That is 17% away from the low at H (measured from high to low), but with this volatile stock, I would tighten the stop because price is going nearly vertical.

When I see price finish three moves in a row where price makes a lower low and lower high (like you see on the way down to H), I will move the stop to the top of the prior price bar and trail it lower. If you did that, it would cash you out the day after H.

Let's assume you didn't do that. How do you sell? If the stock rises, the stop will take you out automatically. Another way is to see the head-and-shoulders bottom forming at GHK. A neckline drawn from F to J and extended to the right marks the breakout price for that chart pattern. Cover your short at the open the day after price closes above the neckline.

If you traded this stock, you would have made about 16%. That value matches the average decline for double tops (see Table 31.2).

32
Double Tops, Eve & Adam



RESULTS SNAPSHOT

Appearance: Price climbs to twin peaks that top out at about the same price. The left peak looks wide and rounded, but the right peak is narrow and sharp, an inverted V shape. Price drops after the right peak.

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	16 out of 36
Breakeven failure rate	21%
Average drop	15%
Volume trend	Upward
Pullbacks	64%
Percentage meeting price target	55%
See also	Double Tops, Adam & Adam; Double Tops, Adam & Eve; Double Tops, Eve & Eve

The Results Snapshot shows the important statistics for the Eve & Adam double top. This pattern is rare. It has just a few more samples

than the rarest of the four combinations of Adam and Eve double tops.

The average decline (15%) meets the value of all chart patterns (15%), giving it a performance rank of 16 out of 36 where 1 is best. That's just above the halfway mark. Failures have a rank of 14 out of 36 (not shown).

The volume trend is random, really, with 51% trending upward. Pullbacks occur with the same frequency that we see in other chart patterns, happening in almost two out of three cases.

Price meets the measure rule target just over half the time, suggesting price doesn't drop as far as one might expect or hope.

Let's take a quick tour.

Tour

Figure 32.1 shows what a double top looks like. The Eve top is wide and rounded-looking compared to the Adam top, which appears narrow, like an inverted V, usually with a long, one- or two-day price spike. The pattern forms after an upward price trend and does not become a true double top until price closes below the confirmation line. Only then should a trader take a position in the stock or sell an existing holding.

This figure also shows good examples of gaps: breakaway, continuation, and exhaustion. The first of the trio appears just before confirmation and leads to the ultimate low in September. Another pair begins in December with a breakaway gap overlapping the earlier continuation gap and creating a price island from September to December. An exhaustion gap signals the end of the fast, uphill run. After that, price still climbs, but at a more sedate pace.

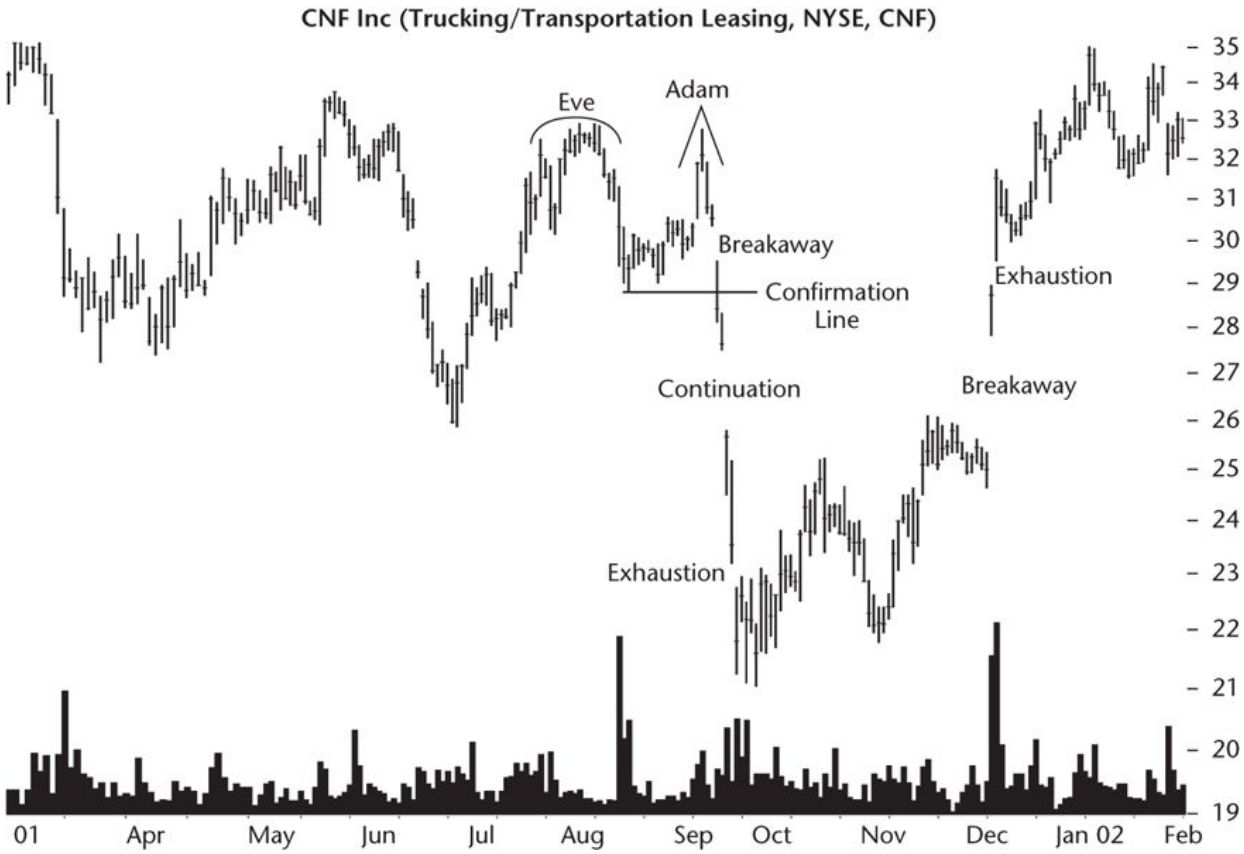


Figure 32.1 This is a good example of an Eve & Adam double top, except for the volume trend. Volume is usually heavier on the right top than the left. Gaps set off an island reversal chart pattern in September and December.

Identification Guidelines

How do you distinguish an Eve & Adam double top from any ordinary twin-peak pattern? Look at **Figure 32.2** and **Table 32.1** for the answer. The figure shows two Eve & Adam double tops.

Appearance. Look for two peaks; the left one, Eve, should be wider and more rounded-looking than the right one, Adam. Adam is narrow, usually an inverted V shape, and many times with a one- or two-day price spike. Above all else, the two tops should look different from each other.

In the figure, the difference between the shapes of the two peaks in each case is clear. To help gauge the width, look farther down the top, toward the base of the chart pattern. Adam peaks usually remain narrow, but Eve is wide. For example, the May double top at a price of 29 shows Adam as a one-day price spike, but Eve is much wider.

Price trend. To create a top, price must be trending upward, even if the trend is short. For reference, the median price trend leading to the double top in the stocks I looked at was 123 days, or about 4 months long.

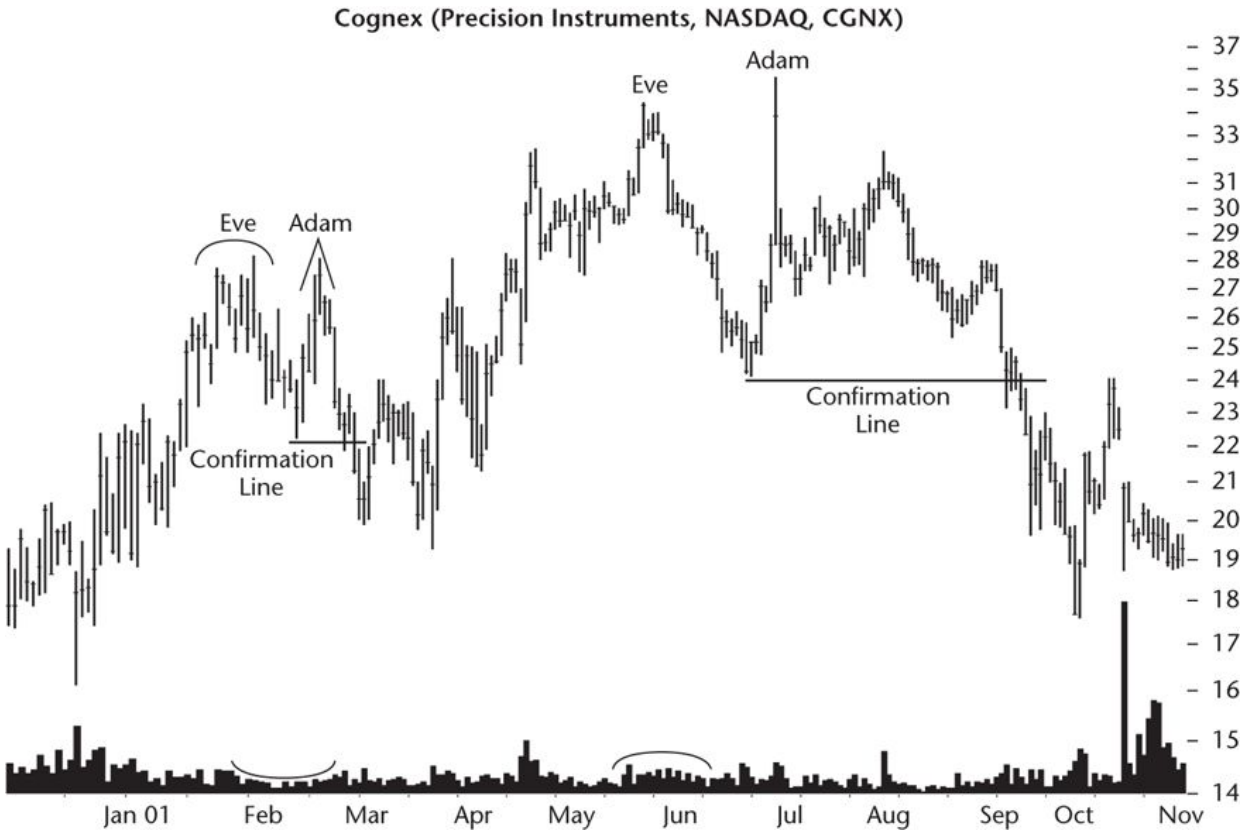


Figure 32.2 Two twin peaks confirm as Eve & Adam double tops when price closes below the confirmation line.

Table 32.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price rises into a twin-peak pattern. The left peak is an Eve top, and the right one is an Adam peak. Price must drop and confirm the pattern after the Adam peak.
Price trend	Price trends upward leading to the pattern and should not form a third peak, nor should the twin peaks be part of the same consolidation pattern. Look for two minor highs.
Valley between tops	Patterns with a large dip (a tall pattern) perform better than small (short) ones. The median valley depth is 9%.
Top high price	Top-to-top price variation is small: 1% (median).
Top separation	Tops should be at least a few weeks apart (median 22 days).
Price decline after right top	Price must close below the confirmation point without first rising above the right top high.
Volume	Higher on the right top but only 51% of the time.
Breakout direction, confirmation	The breakout is downward when price closes below the lowest valley between the two tops. A downward breakout confirms the pattern as a valid double top.

Valley between tops. Look for a price dip between the two tops. Some will say 10% is the minimum, but I did not use a limitation. The median drop I found in my patterns was 9%. The dip separates the two tops, so they are not part of the same consolidation region.

Top high price. The highest high on the left peak should be close to the price of the right one. Often the differences are small (median of 1%). Many times I'll select patterns with peaks obviously not at the same price as long as they appear in the spirit of a twin-peak pattern.

Top separation. The median top separation was 22 days, measured from the highest high in each peak. What you want to see are two minor highs, well separated and defined.

Price decline after right top. Price must close below the confirmation price without first forming a third peak. If a third peak appears before confirmation, then trade the pattern as a triple top (but check that it confirms as a valid chart pattern).

Volume. Of the four types of Adam and Eve double tops, this is the only one to have volume heavier on the right top. However, it's nearly random with 51% showing volume higher on the right peak.

Breakout direction, confirmation. Price breaks out downward from the pattern, by definition. If price closes above the top of the highest peak in the pattern, then it's not a double top. When price breaks out downward, it confirms the pattern as valid.

Focus on Failures

Why do double tops fail? There are many reasons, including a general market that reverses trend. Since a rising tide lifts all boats, your stock may climb with the bull market or falter if the company is struggling. If other stocks in the industry are doing well, that activity will tend to support the stock. Fundamental factors, such as good retail sales, an exceptionally good quarter, insider buying, a stock buyback program, or positive comments about the future made by management will all help boost the stock price. However, the one key element I find time after time is an impenetrable support zone below the chart pattern. **Figure 32.3** shows an example.

A support zone forms as far back as January 1997 at about 12.50. I show a portion of the zone's top at the support line (the support line can act as both support and resistance, depending on which way price approaches the line). Peaks in October through November and congestion at B add to the massive support. The support was enough to turn back price at A and stall the downtrend at C. I would expect price to pause there on the way up, too, which it did several times, as late as 2007, a decade after the zone started.

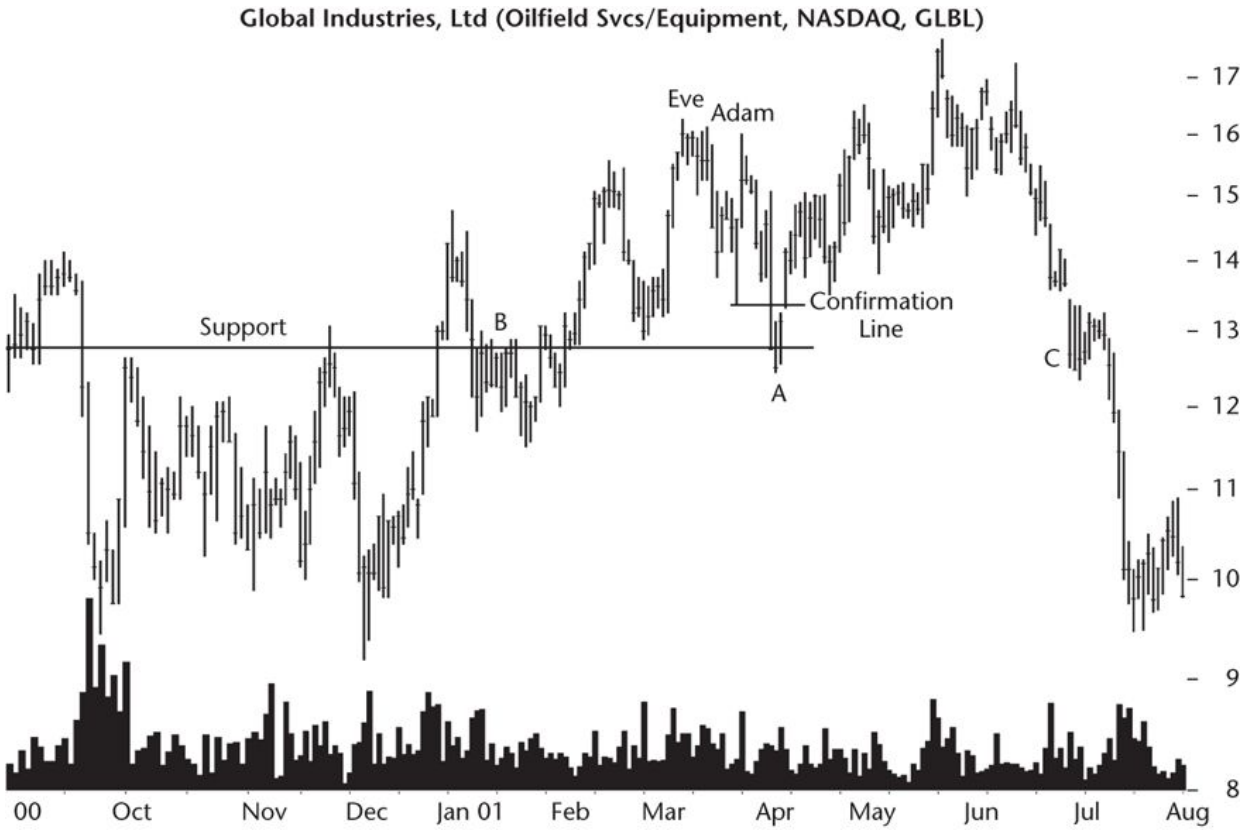


Figure 32.3 Support at point B and the many peaks in October through November stop the price decline at A. The support zone also caused congestion at C.

Statistics

Table 32.2 shows general statistics.

Number found. I uncovered 777 double tops in 513 stocks starting from July 1991 to March 2020. Not all stocks covered the entire period, and some no longer trade. Bear market patterns numbered 115, too few to make the cut in this edition. I sent them back down to the minor leagues.

Reversal (R), continuation (C) occurrence. By definition a double top acts as a reversal of the upward price trend.

Average decline. The average decline is, well, average. It's half a percentage point (15.4%) above the average for all chart patterns (14.9%).

Standard & Poor's 500 change. In bull markets, the S&P index dropped 4%, helping stocks drop. I measured the drop from the date of breakout to the ultimate low of the double top and applied those dates to the index and then checked performance. Notice how the average decline is significantly higher than that shown by the index.

Days to ultimate low. It takes just about 7 weeks for price to reach the ultimate low.

How many change trend? A trend change is a drop of more than 20%. Eve & Adam chart patterns fall short of the average (28%) for all bearish chart patterns. In other words, 27% of double tops will see price drop more than 20% after the breakout. The higher the number shown in the table the better I like the pattern.

Table 32.3 shows failure rates. How do you read this table? Let me give you a few examples. Suppose your total cost of trading is 5%. How many patterns will fail to drop more than that? Answer: 21% in bull markets. If you want to make an additional 10% above your cost (a total of 15%), how many double tops will fail see price drop more than 15%? Answer: 61%. That's a huge failure rate for such a small drop.

In the Trading Tactics section, we'll discuss the measure rule. Suppose it projects a decline from 10 to 8, or 20% in an Eve & Adam pattern you wish to trade. How many double tops will see price decline 20% in bull markets? Answer: 27% (73% will fail to decline

more than 20%). Thus, the target of 8 seems like a dream, so make the target more conservative by picking one closer to 10.

Table 32.2 General Statistics

Description	Down Breakout
Number found	662
Reversal (R), continuation (C) occurrence	100% R
Average decline	–15%
Standard & Poor's 500 change	–4%
Days to ultimate low	50
How many change trend?	27%

Table 32.3 Cumulative Failure Rates

Maximum Price Decline (%)	Down Breakout
5 (breakeven)	142 or 21%
10	169 or 47%
15	92 or 61%
20	79 or 73%
25	53 or 81%
30	35 or 86%
35	33 or 91%
50	40 or 97%
75	18 or 100%
Over 75	1 or 100%

Table 32.4 Breakout and Post-Breakout Statistics

Description	Down Breakout
Breakout direction	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –18%, M –15%, H –14%
Pullbacks occurrence	64%
Average time to pullback peaks	–6% in 6 days
Average time to pullback ends	12 days
Average decline for patterns with pullbacks	–14%
Average decline for patterns without pullbacks	–18%
Percentage price resumes trend	53%
Performance with breakout day gap	–16%
Performance without breakout day gap	–15%
Average gap size	$1.09

Table 32.4 shows breakout-related statistics.

Breakout direction. As I mentioned earlier, the breakout is downward from a double top by definition. A breakout happens when price closes below the lowest valley between the two peaks.

Yearly position, performance. What position in the yearly high–low trading range performs best? Those double tops with breakouts within a third of the yearly low outperform the other two thirds. You'll want to avoid trading double tops with breakouts near the yearly high. Or to put it another way, if you own a stock making new highs and you see a double top, don't freak out. The decline may be less than you expect (and the pattern may not confirm anyway). However, you may run across the outlier and have your wallet or purse ripped out of your hands, so do your diligence checks.

Pullbacks. Almost two out of three (64%) Eve & Adam double tops pull back to the breakout price and take an average of 12 days to complete the trip. When price does pull back, the upward retrace

breaks downward momentum and performance suffers. At least that's the story I'm telling everyone.

After a pullback completes, price returns, trending downward just over half the time.

Before trading, look for underlying support. If a support zone is nearby, then bet on a pullback happening.

Gaps. Gaps hurt performance, as Table 32.4 shows. The performance difference is minimal, though.

Table 32.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones. I measured height from the higher of the two peaks to the confirmation price, then divided by the confirmation price. Results higher than the median, shown in the table, mean the pattern was tall.

Width. I looked at pattern width, measuring between the highest high in each peak, and compared that to the median length. Wide patterns outperformed narrow ones.

Height and width combinations. Patterns both tall and wide performed best. Avoid those that are short (either wide or narrow).

Table 32.5 Size Statistics

Description	Down Breakout
Tall pattern performance	–18%
Short pattern performance	–13%
Median height as a percentage of breakout price	9.6%
Narrow pattern performance	–14%
Wide pattern performance	–17%
Median width	22 days
Short and narrow performance	–13%
Short and wide performance	–13%
Tall and wide performance	–18%
Tall and narrow performance	–17%

Table 32.6 shows volume-related statistics.

Volume trend. The volume trend is upward, but only 51% of the time. That's near random.

Rising/Falling volume, breakout day volume. The next four rows show how volume may indicate better or worse performance. Rising or falling volume doesn't affect performance and heavy breakout day volume *does* help, but don't wake Mom to tell her. She needs her rest.

Table 32.7 shows how often price reaches a stop location. I split the pattern in half and found that if I placed a stop at the top of the pattern, the order would trigger only 4% of the time. Place the stop-loss order at a different location and the hit rate changes. The top of the pattern may be too far away, so a potential loss may be expensive. Do check to be sure you can tolerate the potential loss without yelling too loudly.

Table 32.8 shows performance over three decades.

Performance over time. The 1990s were the star decade for performance. The other two decades tied for second place.

Failures over time. The numbers are as I expected. Failures have increased in each decade since the 1990s. The trend doesn't bode well for the 2020s, but at least the trend is consistent.

Table 32.9 shows busted pattern performance. As you may know, a bust occurs when price breaks out downward, drops no more than 10%, before reversing and closing above the taller of the two peaks in the double top.

Busted patterns count. Almost half of Eve & Adam double tops will bust. That's alarming if you like to sell short.

Table 32.6 Volume Statistics

Description	Down Breakout
Volume trend	51% up
Rising volume trend performance	–15%
Falling volume trend performance	–15%
Heavy breakout volume performance	–16%
Light breakout volume performance	–14%

Table 32.7 How Often Stops Hit

Description	Down Breakout
Pattern top	4%
Middle	18%
Pattern bottom	70%

Table 32.8 Performance and Failures Over Time for Bull Markets

Description	Down Breakout
1990s	–18%
2000s	–14%
2010s	–14%
Performance (above), Failures (below)	
1990s	9%
2000s	16%
2010s	27%

Table 32.9 Busted Patterns

Description	Down Breakout
Busted patterns count	289 or 44%
Single bust count	187 or 65%
Double bust count	9 or 3%
Triple+ bust count	93 or 32%
Performance for all busted patterns	34%
Single busted performance	51%
Non-busted performance (Eve & Adam double bottom)	42%

Busted occurrence. I sorted each busted pattern into single, double, and three or more busts. Single busted patterns occur in almost two of every three busted patterns.

Busted and non-busted performance. I used Eve & Adam double *bottoms* as the proxy for non-busted patterns. Single busted double tops beat the non-busted double bottoms and also the combined performance of single, double, and three or more busts (triple+).

What are the galactic implications of this? Trade a single busted double top if you can find one. How can you tell if a double top will bust once only? I haven't figured that out yet.

Trading Tactics

Table 32.10 shows trading tactics for double tops. They are similar to other double tops.

Measure rule, targets. Use the measure rule to help predict a target price to which your stock may descend after the breakout. For example, in Figure 32.5, the Adam peak is the higher of the two, and it tops out at 34.90. The confirmation price is the lowest low between the two peaks, and it is at 31.70. The difference is 3.20. Subtract the height from the confirmation price to get a target of ... wait a minute. Let me find my calculator. It's solar powered, and I'm using it at night, so maybe you should double-check the result. Answer: 28.50.

Table 32.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern height from the lowest low between the two tops to the highest peak and then subtract the height from the lowest low. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Wait for a close below the confirmation point before selling—usually.
Trade with market trend	For best results, short in a bear market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and trade if they are showing topping patterns or if the stocks are falling.
Stop location	Consult Table 32.7 for stop placement.
Busted trade	Single busted patterns happen 65% of the time and see price climb an average of 51%. Consider trading a busted pattern.

Description	Down Breakout
Percentage reaching half height target	82%
Percentage reaching full height target	55%
Percentage reaching 2× height	30%
Percentage reaching 3× height	17%

Although the measure rule works for the stock shown in Figure 32.5, it only works 55% of the time for Eve & Adam double tops. The bottom portion of the table shows the target hit rate for various heights.

You might want to run the potential drop by Table 32.3 and see what it says. In this case, a 3.20 drop in a stock with a breakout price of 31.70 is a drop of 10%. Table 32.3 says that almost half (47%) of patterns will not drop more than 10% after the breakout. It also means 53% will reach the target. Whether you decide to trade the potential drop is up to you.

Wait for breakout. Most of the time, you will want to wait for price to confirm the pattern by closing below the confirmation price. If you do not wait, there is a 60% chance (I researched this) that price will climb instead of confirming.

However, there are exceptions to the wait for breakout rule. For example, if you see an especially dire situation developing in a stock you own, then protect your profits and sell early. If the market or industry is dropping and there was a quick rise leading to the pattern, then consider selling early (a quick decline sometimes follows a quick rise, but it's rarer than you might expect). Other technical indicators may suggest a sale, so check those, too.

Trade with market trend. Avoid shorting a stock in a raging bull market unless the situation warrants. In bull markets, it may make sense to hold onto a stock and weather the downturn. Look for underlying support that would stop a decline. Usually, when the bull market is pushing price skyward, it is a mistake to sell when seeing a double top. Chances are that in a few weeks or months the stock's price will be higher. Swing traders and short-term traders, however, will want to sell as soon as the pattern confirms (to lock in a long-side profit), then look elsewhere for another trading opportunity.

Check others in the industry. Look at how the general market and other stocks in the same industry are behaving. That activity is often key to how your stock will perform. If other stocks in the industry are falling or showing signs of topping out, chances are your stock will decline, too. If so, it is best to sell a long holding or consider shorting the stock.

Stop location. Table 32.7 shows guidance for stop placement, so look at the numbers and read the brief description. Be sure to change the potential loss into a percentage and check Table 32.3 to see how often price declines that far after a double top breakout.

Busted trade. If you want the potential to make big bucks, trade a busted Eve & Adam double top. Busted double tops beat Eve & Adam double *bottoms* in performance. See Table 32.9 for highlights.

This just in: **Table 32.11** shows special features of the double top!

Top-to-top variation. I looked at the price variation between the highest high in each peak. When the difference was larger than the median 1%, the double top tended to outperform after the breakout. This trend is also true for the other Adam and Eve variations.

Lower top. Do patterns with a lower right peak perform better? No, but the performance difference when the left top is lower is minimal.

Table 32.11 Special Features

Trading Tactic	Performance
Small top-to-top variation	14%
Large variation	16%
Median top-to-top variation	1%
Lower left top	16%
Lower right top	15%

Experience

Figure 32.4 shows an actual trade I made in Bed Bath and Beyond (BBBY), starting in the summer of 1996.

My buy reason is long and complicated, so I won't discuss it much. However, maybe you can make sense of it or find it useful as a bedtime story. “22 July 1996. I purchased at 5.81 [split adjusted] today, at the market. Yesterday, I was reviewing my trend channel trades notebook and noticed that MACD [moving average convergence/divergence indicator] forewarned me not to purchase Varco the first time and to wait on HMSY. This indicator parallels the OBV [on-balance volume] & Bollinger band indicators. So, I compared its signal with BBBY and it said buy. OBV & Bollinger band said purchase was OK, too. It just bounced off the trend channel bottom three days ago [B] after hovering there for a while.

“Although I am late off the channel bottom in buying the stock, I trust it will continue rising [it eased lower for a month]. I did not buy earlier because general market conditions were horrible (general downturn) and I believed that the stock would continue down. When it turned around, I bought.

“VL [Value Line] ranks the stock 1, 3 with a technical rank of 1 as of 28 June (yeah, almost a month ago). With its 30% annual growth rate in new stores, and other fundamental factors, this stock could be a good holding for the long haul. If they can continue store growth with internally generated cash flow, this will be a good stock to own.

“After placing the order last night, I had second thoughts. I think the stock will fall back to its consolidation range, $4.75–5.00 [it hit 5 exactly a day after I bought]. It makes me nervous to buy after the stock has climbed so quickly. Will intuition be right or will the mind prevail?

Figure 32.4 An actual trade made 52% using a potential double top as a sell signal.

“In any case, although I have been watching this stock as a buy candidate for a few weeks now, I was uneasy with the rapidity that I bought this one. Once I noticed that MACD said it was a buy, I checked a few things, then placed the order. Much too quick and not thorough enough.”

I don't know where the trend channel was, but the notebook entry made mention of the channel 3 days before I bought, which I show as B. I bought at A, well above the low at B.

On October 6, I made mention of a small cup-with-handle pattern. I show that as CD (cup) with handle E. Yes, the cup bottom isn't rounded at all. It's more like an ugly double bottom as part of a big W (a pattern with a higher second bottom (the ugly part) and one with tall sides—the big W).

Let's advance the timeline to 4 October 1997, a year later. “I placed an order to sell half my holdings at the market tomorrow. Why? A budding double top formation. I know that you should wait for confirmation, but the decline to 7.63 from the current 8.75 is just too far to wait. If it continues to rise (fundamentally speaking, the prospects are bright), then I still have half my holdings. If it declines

to the formation base, at 7.63, or continues on down for another 18% (average for a [double top] reversal), then I'll have the opportunity to buy more. Also, the top at 9.06 is slightly higher than the prior top, 9.03, which is slightly more likely for a double top."

I show the sale at H. The "budding double top" is at F and G. My spreadsheet of the trade calls this an Eve & Adam double top, but is it really? My computer will tell you it's an Eve & Eve, and I think it's an Adam & Eve. That's the problem with Adam and Eve designations. It's too subjective.

Anyway, I made 52% on the trade. The stock reached the ultimate low at I, at 7.20 or 19% below where I sold (at 8.88). Then the stock recovered and peaked at 14.48 in June 1998.

- Lesson: If you think a double top is forming, consider selling near the second peak. If you're right, it could save you money as price drops to confirmation. However, price won't confirm a double top 60% of the time, meaning price will rise instead of drop.

In this trade, selling half of my holding worked well. On the second half of the trade, I made 153%.

Sample Trade

Figure 32.5 shows a sample trade for an Eve & Adam double top. As you look at the figure, it may strike you that the double top takes place in a downward price trend, beginning with the high on the left side of the chart and sliding to the low at the right. It reminds me of a measured move down chart pattern.

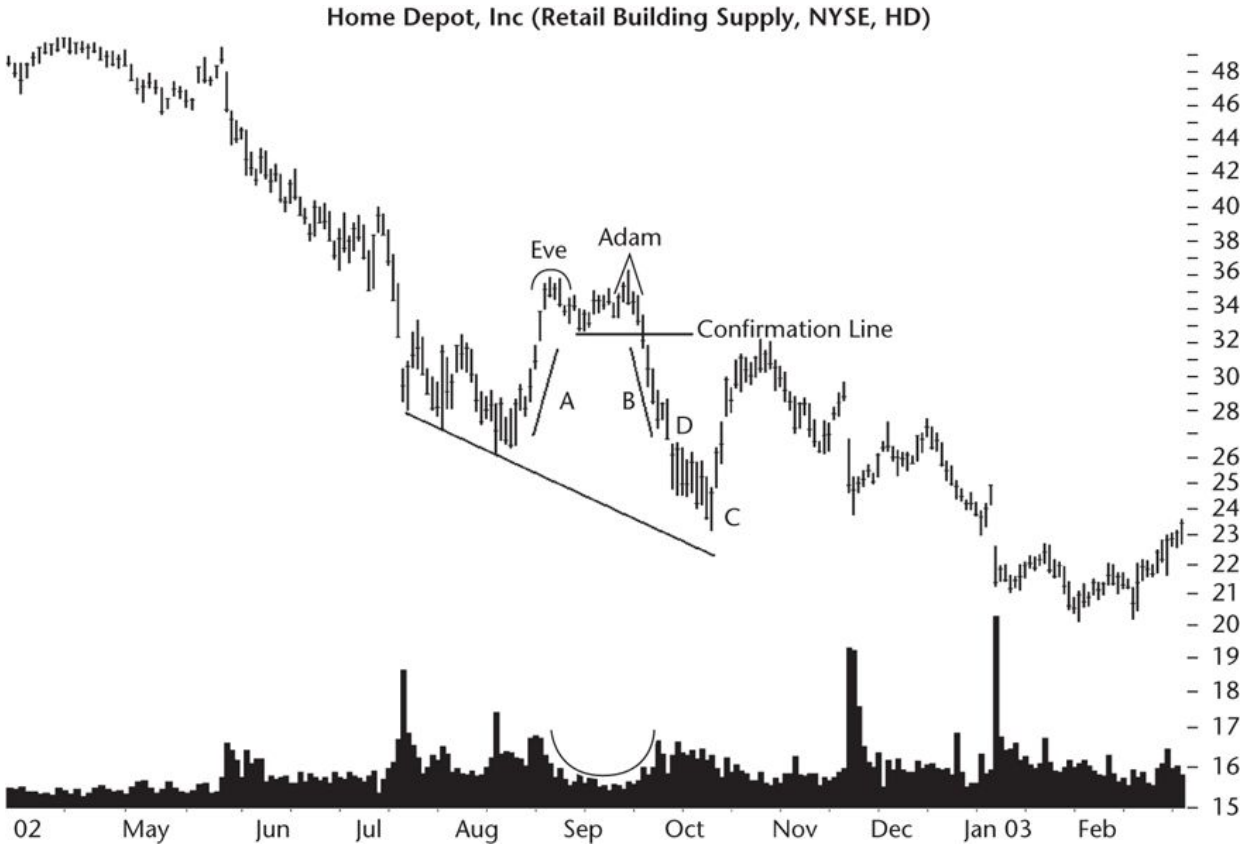


Figure 32.5 This Eve & Adam pattern had a quick rise followed by a quick decline. The decline stalled near the trendline support.

Does the pattern obey the guidelines listed in Table 32.1? The brief rise shown by line A satisfies the upward price trend leading to the double top. The twin-peak pattern shows a rounded Eve top paired with a pointed Adam top. The valley between the tops measures 9%—a bit on the short side, but who's counting? The two tops have prices that vary by just 1% and are 25 days apart. Price drops to the confirmation line without making a third peak. Volume is heavier on the left peak than the right, which is unusual, but that's okay. Thus,

the pattern meets the identification guidelines: It is a valid Eve & Adam double top.

What is so special about this double top? Two things. First, the U-shaped volume pattern is exquisite. Second, notice the quick rise leading to the pattern, highlighted by line A. Price rockets upward for a week, then moves sideways in the double top. Nearly as steep is the decline out of the pattern, shown by line B. If I were trading this double top, I would place an order to sell shares at the confirmation line. That way, I would get in at a good price as the pattern confirmed.

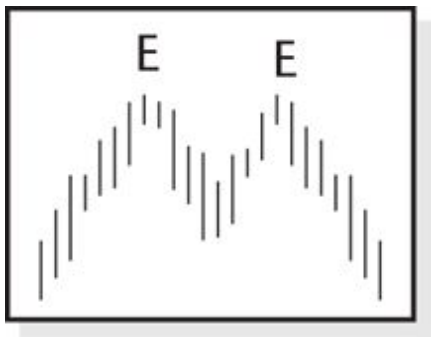
I would expect a pullback because of the July congestion (shown in the first third of the long trendline ending at C). Worst case, I would put a stop at the Adam top, just in case things got out of control.

For the downward target, the measure rule predicts a decline to 28.50, as I discussed in the "Measure rule" in Table 32.10. Since I know that a quick decline can follow a quick rise, I would set the target lower, at the beginning of the quick rise, or about 27.78. Since that is below the round number 28, I would probably target 28.07 or some oddball number above that support. Everyone is going to try buying at 28, and I want to get my price before the others drive it back up.

In fact, you can see that price stalled at 28 for 3 days before resuming the tumble (point D in Figure 32.5). If, by some magic, I stayed in the trade, I would expect a further decline to the down-sloping trendline. A rising volume trend as price declined is a good sign of a strong down move.

The quick rise after C suggests you need to be on top of this stock, following it closely to time the exit if you do not use a stop order. Delays are costly.

33
Double Tops, Eve & Eve



RESULTS SNAPSHOT

Appearance: Two peaks appear at about the same price level. Both peaks have wide, rounded-looking turns.

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	12 out of 36
Breakeven failure rate	20%
Average drop	16%
Volume trend	Downward
Pullbacks	65%
Percentage meeting price target	43%
See also	Double tops, Adam & Adam; double tops, Adam & Eve; double tops, Eve & Adam

When traders say, “double top,” they are most likely referring to an Eve & Eve double top. This is the classic double top, but performance places it behind the Adam & Eve double top.

The above performance rank (12 out of 36 where 1 is best) shows the chart pattern is near the top tier among the family of chart patterns. The breakeven failure rate is better than the average of 24.7% for types of all chart pattern, but it ranks 11 there (not shown).

Volume trends downward 59% of the time and pullbacks happen about two of every three trades. Let me share some family photos with you of the pattern.

Tour

Figure 33.1 shows what an Eve & Eve double top looks like. It reminds me of a person with large eyebrows, the confirmation line points to the nose, and the mouth is the U-shaped volume pattern.

In the second edition I discussed volume shapes, but decided in the third edition that volume shape was too subjective. If the pattern was long, it could have several volume shapes involved. That confused the issue. Volume shape was an interesting idea that didn't add trading value. So I removed it. Now I'm wondering if the shape of price between the two peaks adds value. I'll consider exploring that another time, but look for price to form a valley between the peaks, making the two peaks stand out.

The twin peaks look similar in that both have wide bases and a gentle (but not necessarily smooth) price turn at each top. Contrast the two Eve peaks with the two Adam peaks in March and April. Those peaks are narrow, and a one-day price spike soars above the surrounding landscape. If price spikes appear in an Eve top, they are often more numerous and short (although not in Figure 33.1).

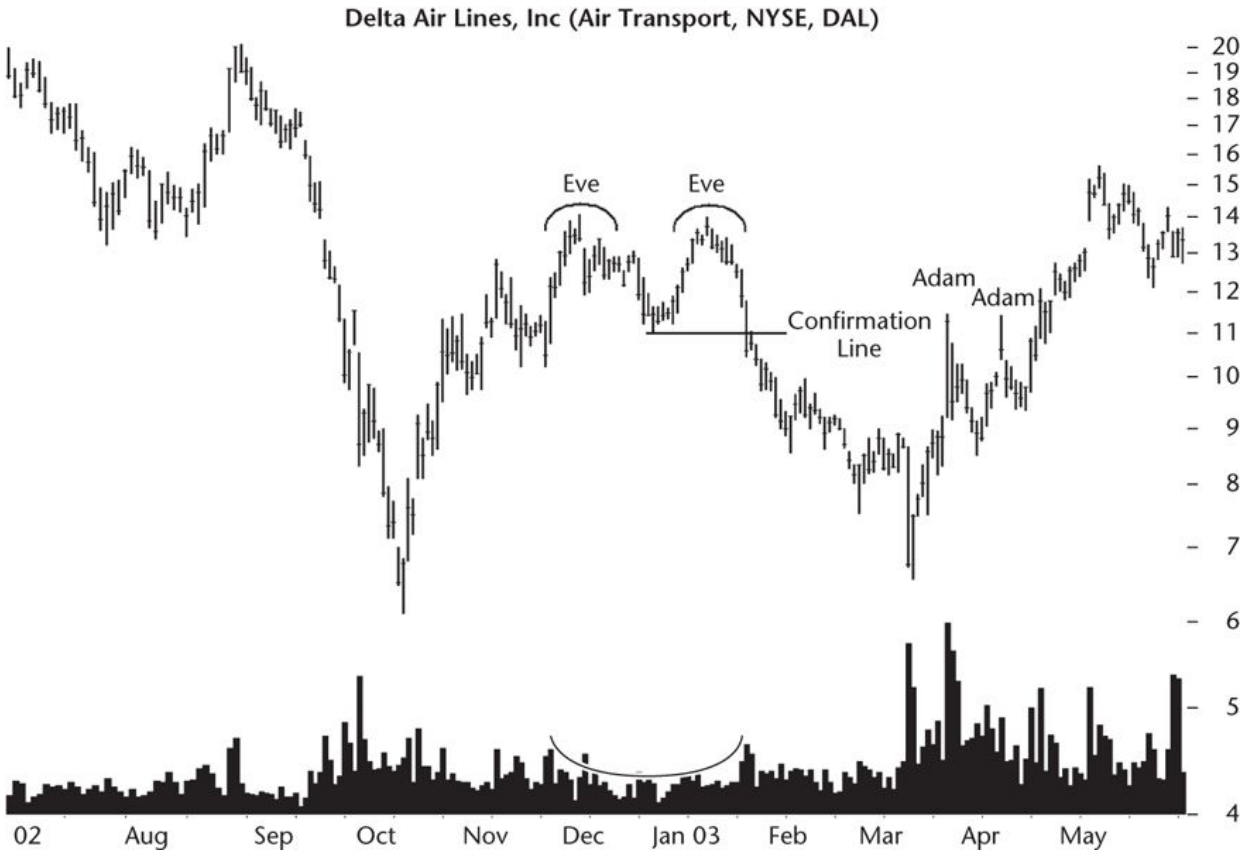


Figure 33.1 The twin-peak Eve tops become a valid Eve & Eve double top when price closes below the confirmation line.

A better version of the Adam shape is the two lowest valleys on the chart (October and March). Yes, they are bottoms but narrow, V-shaped turns. Flip them upside-down and they would make terrific Adam tops.

What should a trader look for when selecting reliable (low failure rate and high price performance) twin peak patterns?

Identification Guidelines

Table 33.1 shows identification guidelines for Eve & Eve double tops. Refer to **Figure 33.2** for an example.

Appearance. The two tops should look similar to each other. That is, the wide and rounded September peak should not look like the narrow price spike of the Adam peak in April. Although the August Eve peak has a twin spike, the top is wide enough to mirror the September peak, so I classify it as an Eve top, too. Adam tops look more like the peak that "Pullback" points to in the figure. The width does not widen much as you scan down the pattern. Both Eve peaks are considerably wider than the Adam "Pullback" one.

Price trend. Since we are dealing with tops, price must trend upward leading to the start of the pattern and leave the pattern heading downward. The upward price trend leading to the double top need not be long. Figure 33.2 shows a steep 48-day uptrend from the late June low.

Table 33.1 Identification Guidelines

Characteristic	Discussion
Appearance	Both Eve peaks should appear rounded and wide, not made of a single, narrow price spike. The two peaks should look the same and sit atop an upward inbound price trend and break out downward.
Price trend	Price trends upward leading to the pattern and should not form a third peak, nor should the twin peaks be part of the same consolidation pattern. Look for two distinct minor highs.
Valley between tops	The median valley depth is 12%, but the drop isn't critical to performance.
Top high price	Top-to-top price variation is small. One percent is the median.
Top separation	Tops should be at least a few weeks apart with the median being 36 days wide.
Price decline after right top	Price must close below the confirmation point without first rising above the right top high.
Volume	Usually heavier on the left top than the right, but allow exceptions.
Breakout direction, confirmation	The breakout is downward when price closes below the lowest valley between the two tops. A downward breakout confirms the pattern as a valid double bottom.

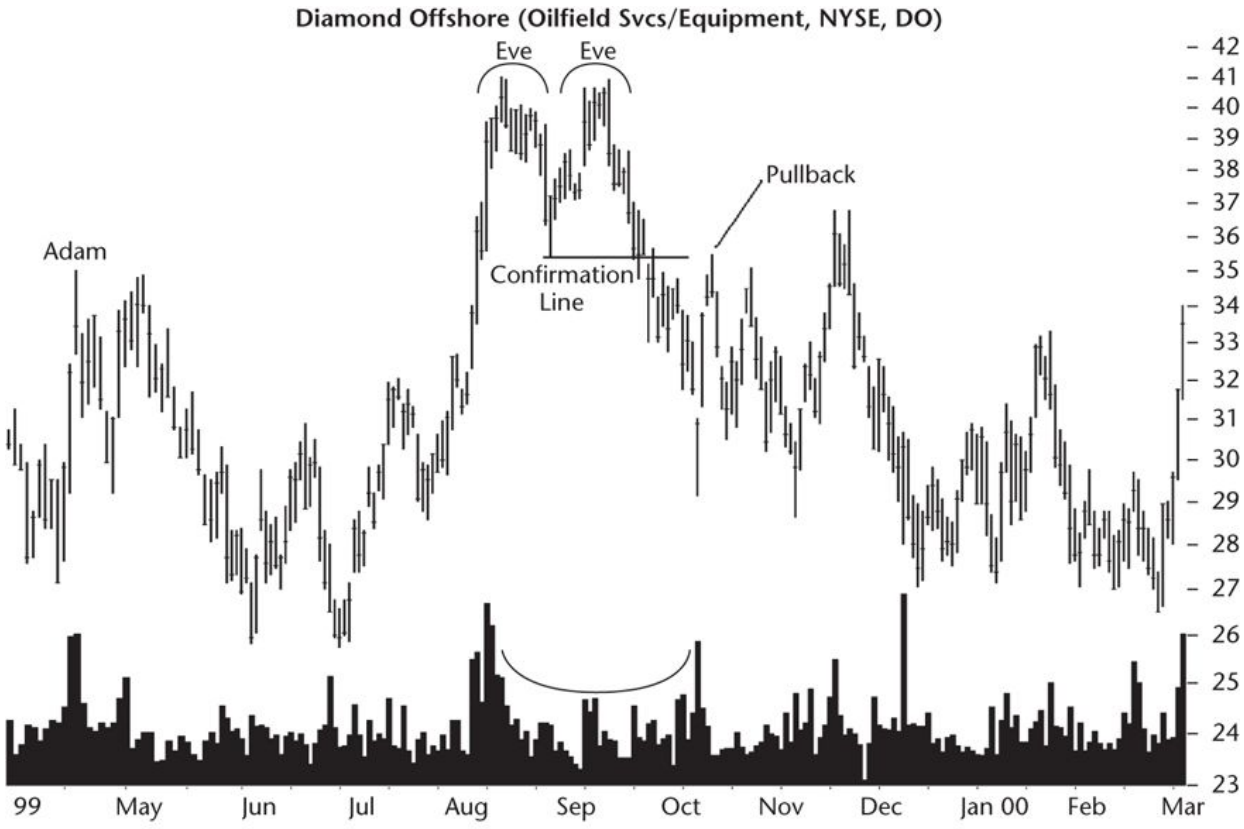


Figure 33.2 Two peaks, similar in appearance, stand atop the price trend and act as a reversal.

Valley between tops. The valley between the tops varies in depth. The figure shows a dip of 14%, measured from the highest high to the lowest low in the pattern. The depth measure is just a guideline, not a rule, so allow variations. I will say that dips larger than the median perform slightly better (by two percentage points).

Top high price. The peaks should top out near the same high price. The usual price difference between the two peaks is tiny, 1% (median). The peaks should not look like stair-steps, but like two tops hitting overhead resistance near the same price. Figure 33.2 shows tops with almost no (0.29%) price difference.

In patterns I look at for my trading, I'm not that concerned with whether the two peaks align in price. As long as they appear Eve-shaped and look like a topping pattern, then I'm fine with it.

Top separation. Look for two well-separated peaks, not twin bumps that are part of the same congestion pattern. The double top in the

figure, for example, shows peaks 33 days apart (measured between the two highest price bars), and that's typical.

Price decline after right top. Price must close below the confirmation line to validate the double top pattern. If a double top forms a third peak before price closes below the confirmation line, then consider it a triple top and trade it as such.

Volume. Volume varies but is usually heavier on the left top than on the right. However, do not exclude a potential double top just because volume is heavier on the right peak than the left.

Breakout direction. When price closes below the lowest valley between the two peaks, it stages a downward breakout. If price closes above the top of the pattern first, then it's not a double top.

When price breaks out downward, it confirms the pattern as a true double top. Investing without waiting for confirmation is usually an amateur's game, one that ends in a loss or missed profits.

Why do I say that? A study of twin-peak patterns found that 60% climbed away from the pattern instead of dropping down to the confirmation line. The potential double top remained just squiggles on the price chart and not a valid double top pattern.

Figure 33.3 shows another example of an Eve & Eve double top. The right peak looks like two Adam tops, but the peak separation is not wide enough to call the three peaks a triple top. The landscape looks like two hills with the right hill having a few tall trees but still forming one hill.

Running through the identification guidelines, we see that price trends upward to the first top. The two tops look rounded, and the valley between them separates the peaks into two individual hills. The price variation between the two tops is considered large for statistical purposes, measuring 3%, but the tops look like they stop near the same price. Volume is heavier on the right peak than the left (using 2 days before to 2 days after the highest high in each peak), which is unusual. Price confirms the pattern in April when it closes below the confirmation line. Within a month, price pulls back to the confirmation line before resuming the downtrend.

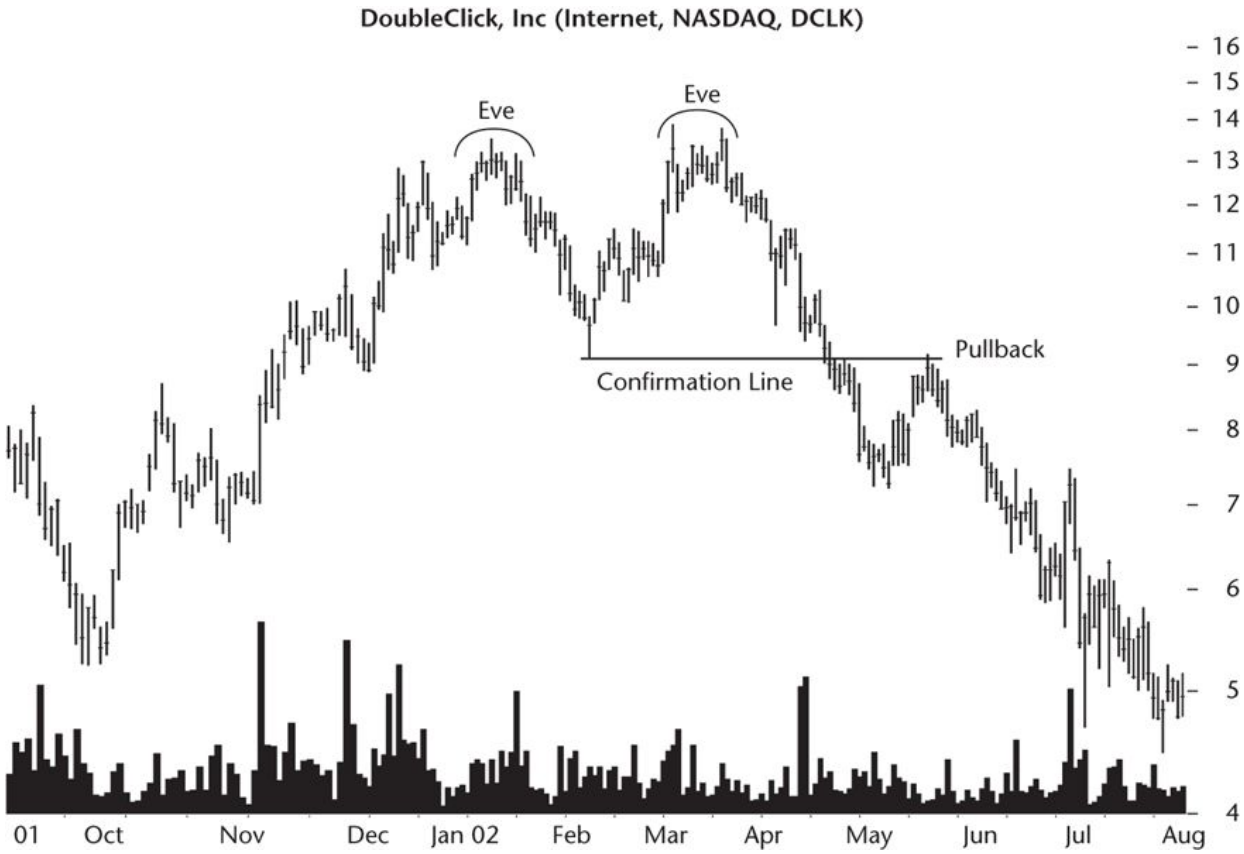


Figure 33.3 An Eve & Eve double top reverses the upward price trend. The pattern confirms as a valid double top when price closes below the confirmation line.

Focus on Failures

What does an Eve & Eve double top failure look like and can anything be learned from it? Consider **Figure 33.4**, a common failure of a double top. The twin peaks satisfy all of the identification guidelines outlined in Table 33.1 with two exceptions.

First, the volume pattern is suspect. Volume on creation of the left top is high but lasts only 1 day. The right top volume is dense, high, and remains high for about a week as the top forms. However, in defense of the double top, the volume pattern often varies from the norm and offers little clue to the eventual outcome. In other words, the volume pattern doesn't offer much help in deciding if this pattern will succeed or fail.

The second guideline violated is the more important of the two: Price fails to close below the confirmation point. As I mentioned, this type of failure (failure to achieve confirmation) happens 60% of the time.

Expect top reversals (such as the double top) to perform poorly in bull markets, whereas bullish bottom reversals should excel. That appears to be the case with many of the chart patterns covered in this book.

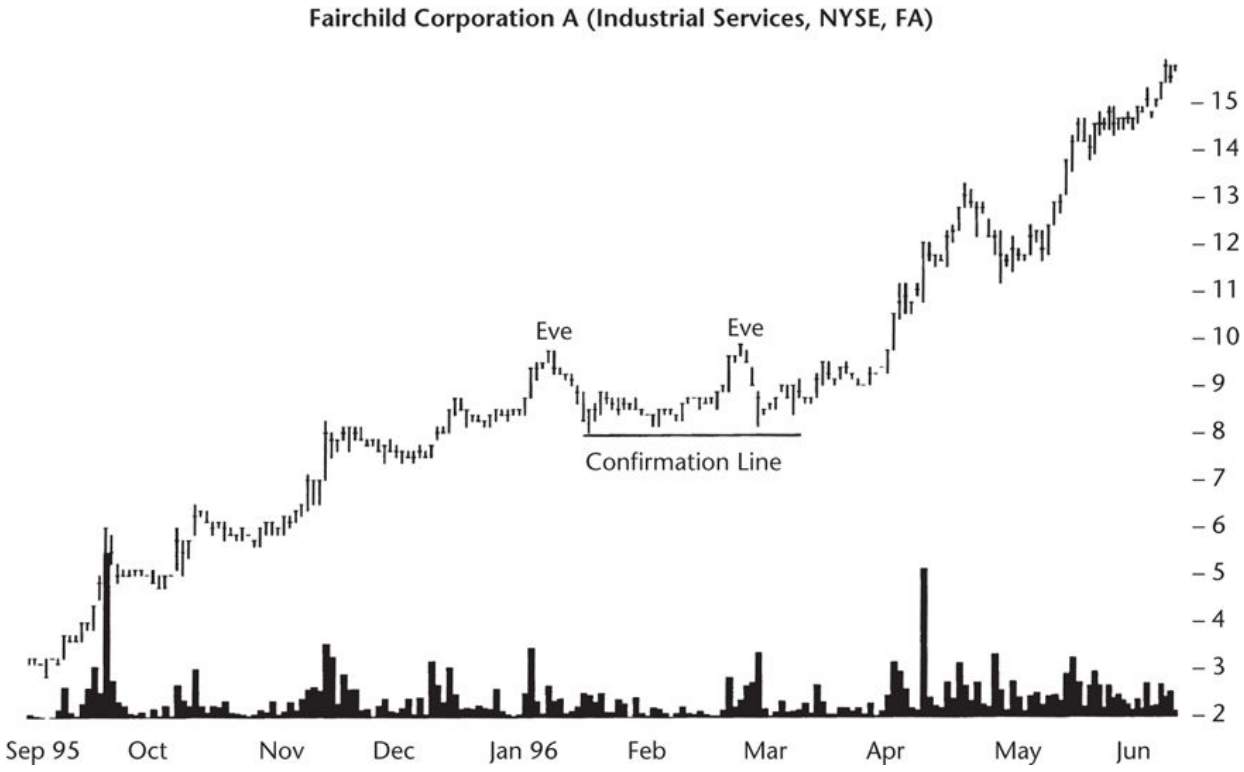


Figure 33.4 A common double top failure. Price declines after the second peak, then rises before reaching the confirmation point.

Another type of failure not shown in the figure is what I call a 5% failure. Price fails to drop more than 5% after the breakout. One in five (20%) double tops will suffer a 5% failure. Compared to other chart pattern types, that's relatively low, but 20% isn't exactly zero.

Speaking of numbers, let's talk about them.

Statistics

Table 33.2 shows general statistics.

Number found. I found 1,196 double tops in 692 stocks starting from July 1991 to February 2020. Not all stocks covered the entire span, and some no longer trade. There were too few double tops appearing in bear markets, so I decided not to cover them in this edition. That's why the table shows fewer found. The statistics only apply to bull markets.

Reversal (R), continuation (C) occurrence. By definition, double tops act as reversals of the prevailing price trend: Price rises into the pattern and leaves heading back down.

Average decline. The average decline for all chart pattern types is 14.9%, so the Eve & Eve double top does a bit better than that.

Standard & Poor's 500 change. The index declined, and I believe it helped the double top show better performance. You can also look at this as how well the index did compared to the double top. Both use the same dates from the double top: breakout to ultimate low. The double top performed four times as well as the index, on average.

Days to ultimate low. It took about 2 months for price to reach the ultimate low after the breakout. You may wish to compare the 16% drop in 2 months with other investments to see if they perform as well. However, these numbers are for perfect trades and are an average, so you mileage may vary.

How many change trend? This is my attempt to create a gauge for how trendy a pattern is. I counted how often price fell more than 20% from the breakout. That's not a good definition of trendy, however. Even so, Eve & Eve ranks 12 out of 36 where 1 is best, so this chart pattern performs well.

Table 33.2 General Statistics

Description	Down Breakout
Number found	942
Reversal (R), continuation (C) occurrence	100% R
Average decline	–16%
Standard & Poor's 500 change	–4%
Days to ultimate low	56
How many change trend?	29%

Table 33.3 shows failure rates for double tops. You read a row like this: I found that 20% of the double tops failed to see price drop by more than 5%. A decline of 10% sees the failure rate double to 40%. Yikes! It almost triples the 5% failure rate in the next row down in the table (where 58% fail to see price drop more than 15%).

Table 33.4 shows breakout-related statistics.

Breakout direction. In confirmed double tops, the breakout direction is always downward.

Table 33.3 Cumulative Failure Rates

Maximum Price Decline (%)	Down Breakout
5 (breakeven)	188 or 20%
10	187 or 40%
15	167 or 58%
20	124 or 71%
25	91 or 80%
30	50 or 86%
35	45 or 90%
50	66 or 97%
75	23 or 100%
Over 75	1 or 100%

Table 33.4 Breakout and Post-Breakout Statistics

Description	Down Breakout
Breakout direction	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –16%, M –16%, H –15%
Pullbacks occurrence	65%
Average time to pullback peaks	–7% in 6 days
Average time to pullback ends	12 days
Average decline for patterns with pullbacks	–15%
Average decline for patterns without pullbacks	–18%
Percentage price resumes trend	55%
Performance with breakout day gap	–16%
Performance without breakout day gap	–16%
Average gap size	$0.94

Yearly position, performance. Patterns with breakouts within a third of the yearly high perform worst, but the numbers are close enough that the differences are not meaningful (probably not statistically significant).

Pullbacks. A pullback takes 12 days, on average, for the stock to return to the breakout price. When a pullback happens, performance suffers, as the table shows. Look for underlying support and avoid double tops with support close enough to cause a pullback. How close is close? The *median* drop during a pullback is 6%, so use that as a gauge to look for nearby support (that far down).

After a pullback completes, price resumes the downtrend just over half the time. That also means price reaches the ultimate low during a pullback 45% of the time (and price rises thereafter).

Gaps. Whether a gap occurs or doesn't occur, I didn't see any performance difference.

Table 33.5 shows pattern size statistics.

Height. Double tops continue a tradition of seeing tall patterns performing better than short ones. To use this finding, measure the height from the higher of the two peaks to the confirmation line and divide by the breakout price (the value of the confirmation line). If the result is higher than the median shown in the table, then you have a tall pattern. Trade only tall patterns for the best average performance.

Width. Width does not show any performance advantage for double tops. However, in many other chart pattern types, wide patterns usually (85% of the time) show better performance.

Height and width combinations. I looked at the height and width combinations and found that the best performing patterns were tall and narrow ones. Tall and wide patterns place a close second. The worst performance came from double tops that were short and wide. Avoid those by comparing the double top you plan to trade with the median measures shown in the table.

Table 33.5 Size Statistics

Description	Down Breakout
Tall pattern performance	–17%
Short pattern performance	–15%
Median height as a percentage of breakout price	13.7%
Narrow pattern performance	–16%
Wide pattern performance	–16%
Median width	36 days
Short and narrow performance	–15%
Short and wide performance	–13%
Tall and wide performance	–17%
Tall and narrow performance	–18%

Table 33.6 shows volume-related statistics, and I don't see much to be excited about.

Volume trend. Volume trends downward 59% of the time. I found this using linear regression as measured from peak to peak.

Rising/Falling volume. Double tops that see price rise from the left peak to the right have a slight performance edge. It's not an earth-shaking difference, but it is an edge.

Breakout day volume. I saw no performance difference between heavy or light breakout volume, but many technical traders will say that heavy breakout day volume is best. A scan of other chart patterns shows that heavy breakout volume *does* help performance most of the time. I discussed this in the first chapter.

Table 33.7 shows how often price reaches a stop location. If you place a stop-loss order at the higher of the two peaks, you'll be stopped out 1% of the time, on average, if you trade it often enough and if your stocks perform like the nearly 1,000 patterns I examined for Eve & Eve double tops. Other locations show higher stop-out rates.

Once you determine where the stop should go, then divide the potential loss by the current price (as a percentage) and see if you can tolerate such a loss. If not, then move your stop closer (increasing the stop-out risk) or just look for another chart pattern to trade. You don't *have* to trade the one you're looking it. In fact, if you fall in love with (or hate) the stock, it's probably a signal you're making a mistake (you're letting emotions rule).

Table 33.6 Volume Statistics

Description	Down Breakout
Volume trend	59% down
Rising volume trend performance	–17%
Falling volume trend performance	–15%
Heavy breakout volume performance	–16%
Light breakout volume performance	–16%

Table 33.7 How Often Stops Hit

Description	Down Breakout
Pattern top	1%
Middle	12%
Pattern bottom	71%

Table 33.8 shows double top performance over three decades. The two bear markets in the 2000s were not included in the statistics.

Performance over time. The 1990s were the best performing decade for Eve & Eve, but the other two decades are close behind.

Failures over time. Failures have steadily increased over the decades. It makes you wonder what the 2020s will bring.

Table 33.9 shows busted pattern performance.

Busted patterns count. Only about a third of the double tops will bust. That's quite good for a bearish pattern.

Busted occurrence. Single busted patterns, which we'll see as outstanding performers next, happen two-thirds of the time (from those patterns which bust). Placing second are three or more busts (triple+), not double busts. That's not unusual, though.

Busted and non-busted performance. I used Eve & Eve double *bottoms* as the proxy for a double top with an upward breakout (which doesn't exist, by definition). Single busted patterns outperformed the double bottom and the “all busted” combination of single, double, and triple+ busts.

Table 33.8 Performance and Failures Over Time for Bull Markets

Description	Down Breakout
1990s	–17%
2000s	–15%
2010s	–15%
Performance (above), Failures (below)	
1990s	15%
2000s	19%
2010s	25%

Table 33.9 Busted Patterns

Description	Down Breakout
Busted patterns count	341 or 36%
Single bust count	229 or 67%
Double bust count	18 or 5%
Triple+ bust count	94 or 28%
Performance for all busted patterns	38%
Single busted performance	54%
Non-busted performance (Eve & Eve double bottoms)	50%

What does this mean? You could trade an Eve & Eve double top in the normal manner and average 16% if you trade it often enough and perfectly (from Table 33.2). Or you can trade a busted double top, and if it single busts, you can make an average of 54%. There are a lot of *ifs* involved in this, including trading the stock perfectly and trading only patterns which single bust. But I'd rather have a chance of making 54% than 16%.

Trading Tactics

Table 33.10 shows trading tactics, but you'll discover they are similar to other double top patterns.

Measure rule. Use the measure rule to help gauge how far price will decline after the breakout. Take the difference between the highest high in the pattern (the higher of the two peaks) and the valley low (between the two peaks). Subtract the height from the confirmation price to get the target.

For example, the double top shown in Figure 33.5 has the highest high on the left peak at 32.45. The lowest low is at the breakout, 28, for a height of 4.45. Subtract the result from the lowest low to find the target of 23.55. Price fails to reach the target as the stock drops to B.

Table 33.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern height from the lowest low between the two tops to the highest peak. Subtract the result from the lowest low. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Wait for a close below the confirmation point before selling—usually.
Trade with market trend	For best results, short in a bear market.
Check others in the industry	To avoid 5% failures, check other stocks in the same industry and trade if they are showing topping patterns or if they are falling.
Wait for trend change	If you can determine when the stock bottoms or if the pattern busts, then buy.
Stop location	See Table 33.7 for guidance.
Busted trade	Single busted patterns outperform. See Table 33.9.
Tips	See text.

Description	Down Breakout
Percentage reaching half height target	71%
Percentage reaching full height target	43%
Percentage reaching 2× height	19%
Percentage reaching 3× height	11%

How often does the measure rule work? Glad you asked because I provide the answer in the lower portion of the table. Using the full

height, as in the example above, price reaches the target just 43% of the time. Maybe that explains why the stock in the figure didn't drop that far.

If you cut the height in half and use that in the computation, you'll see that the stock reached the closer target (25.77) on the way to B.

For another check, convert the target distance into a percentage of the current price. In this example that's 4.45/28 or 16%. Table 33.3 says that 58% of the stock will fail to see price drop more than 15%. That means 42% will work as you hope, and that's not a good probability in my opinion.

Wait for breakout. Since 60% of twin-peak patterns never confirm (price trends higher), you should wait for the breakout before selling a long holding or shorting a stock. The exception to this rule is if you have a compelling situation that demands a quick exit.

For example, if price just completed the turn at the second top and the company issues an earnings warning, sending the stock tumbling, then consider selling immediately. Chances are that the next quarter will also be bad (but this depends on why earnings are soft; some problems are easily fixed while others are not).

Trade with market trend. Eve & Eve double tops are bearish chart patterns, so it makes sense to trade them in bear markets, not in bull markets. If you own stock in a bull market and it double tops, can you weather the downturn? If the general market is soft when your stock double tops, maybe it is time to sell. Me? I ignore double tops because the decline is usually not severe enough to be worth paying capital gains taxes to the government. That's often the case in a raging bull market. You'll see a double top that will take price down, but not far, only to see the stock recover quickly and soar to new highs. But it's your money and selling near the top is better than selling near the bottom.

Check others in the industry. If other stocks in the same industry are hurting along with yours, then sell your stock or consider shorting. This advice is especially useful if the general market is tumbling, too.

Wait for trend change. With such a large price rise after the ultimate low (or from a busted pattern), consider buying then. The

Sample Trade gives an example.

Stop location. Table 33.7 shows various stop locations for double tops. Be sure to convert the potential loss into a percentage of the current price. If the value is too large (many use 8% as a maximum loss value), then either adjust the stop or abandon the trade.

Busted trade. Table 33.9 discusses trading single busted patterns. I think that's probably the best way to trade a double top. Unfortunately, it relies on a single busted pattern, and there's no guarantee that the stock will bust only once. Thus, it's a risk, but the reward can fill your wallet or purse if you trade the pattern often enough and well enough.

Tips. The tips I discussed in the chapter on Adam & Eve double tops apply to its twin, Eve. Let's talk about them. In the first series of tips listed below, look for a strong push upward leading to the first top, not a trend that meanders and rollercoasters for months before forming the peak.

When I write of a *knot*, Figure 31.5 (not Figure 33.5) shows an example of what I'm blabbering about. You'll see it at I, circled in the figure. Price moves sideways for at least 3 days with lots of price overlap. It's in the line of trend leading up to the Adam peak, and it's the closest support knot below confirmation. That's the target. Price at A almost reaches that knot and reverses.

- In your stock, look to the left where price trends up to the double top. If the stock *at confirmation* is resting on a knot of support, then don't take the trade. Expect the stock to bounce off that knot and maybe bust the downward breakout. It's too high risk to short the stock.
- Look for the first knot of support *below confirmation*. The top of that knot is your price target. Price will often drop to the top of the knot right after a breakout and reverse there. It's a good time and price to close out the trade.
- If the knot of support is well down the price trend (such as when price makes a steep but long rise up to the double top), the stock likely won't make it back down to the knot, at least not in the first few days. Measure the move from the knot to the confirmation

price and divide by three or maybe half and subtract it from the confirmation price. That's your target.

- Figure 31.4 shows an example of this strong move up to the Adam peak. There's no support area (no place where price goes horizontal for 3 or more days) along that run, so slice the height of the run in half or thirds and measure down that far from the confirmation price as your target.

  Table 33.11 Special Features

Trading Tactic	Performance
Small top-to-top variation	14%
Large variation	18%
Median top-to-top variation	1%
Lower left top	16%
Lower right top	16%

- Sometimes price will bottom in an irregular fashion (before the first Eve peak) with several valleys touching an up-sloping trend. Connect those valleys with a trendline. That's your target. This works with a loose-looking up-and-down movement that's quite wavy but seems to bottom along the trendline. That trendline, extended into the future, is a support area where the stock will drop and reverse. This setup is rare, but I've seen price hit the trendline and reverse there.

Table 33.11 shows special features for double tops.

Top-to-top variation. Patterns in bull markets show better performance when the price variation between the highest high in each top is larger than the 1% median. The difference between the two is large enough that you might want to pay attention to this idea.

Lower top. I didn't see any performance improvement in this measure. I checked to see if performance changed depending on which top of the double top was lower.

Sample Trade

Figure 33.5 shows the sample trade for Eve & Eve double tops. In a bull market, after a double top, price soars 60% after reaching the ultimate low (as I've mentioned). Even if you are late calling the turn, you can still make a profit. Consider the Eve & Eve double top shown in the figure.

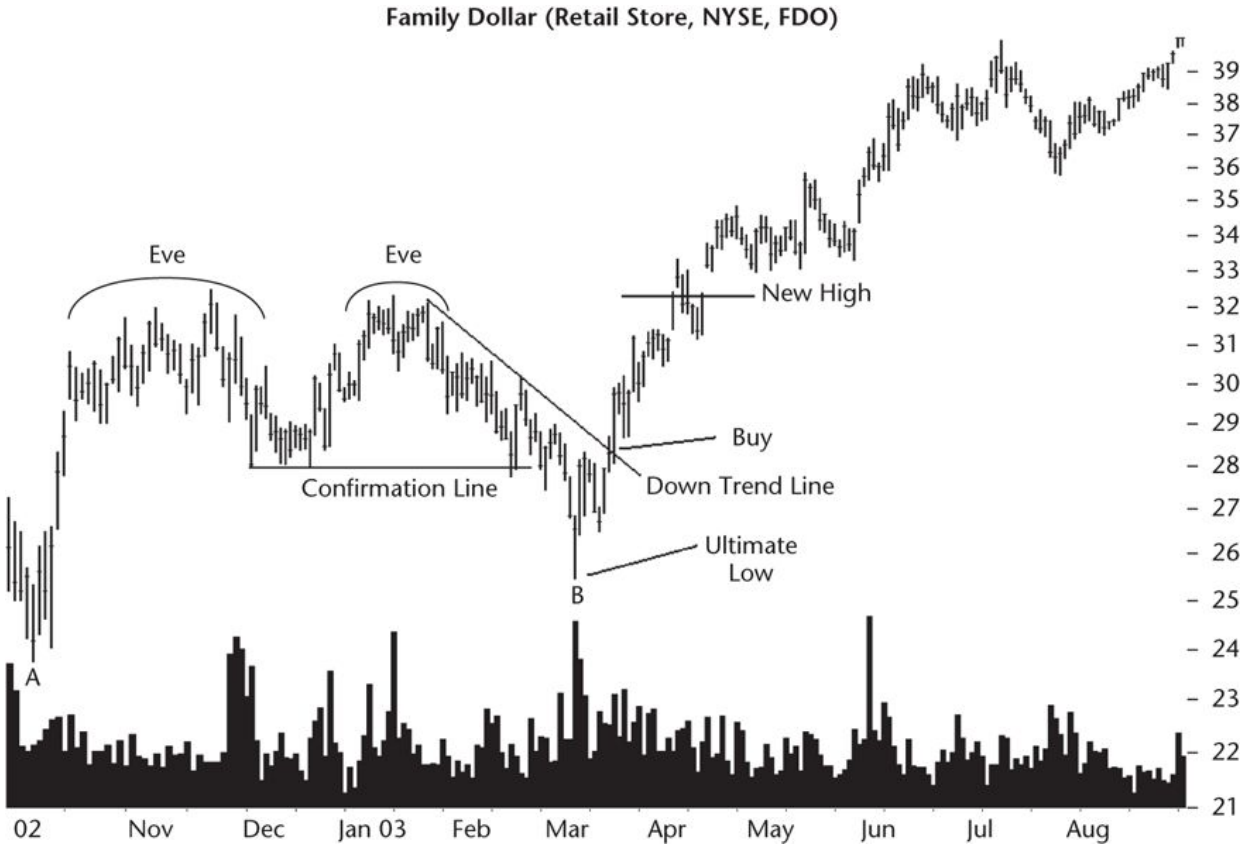


Figure 33.5 Consider buying the stock once the decline completes. Sometimes, the resulting rise can be quite profitable.

Before you trade this stock, ask yourself if it is an Eve & Eve double top. Running through the identification guidelines shown in Table 33.1, we find that the price rise leading to the pattern begins at A (far left, bottom). Both peaks look similar in that they are wide and made of several short spikes—all characteristic of Eve tops. The left peak is more pointed but wider than the right one, but they look like two rounded hills on the price landscape.

The valley between the two peaks dips 14%, and the peaks top out at about the same price. The peak-to-peak separation measures 55 days

or almost 2 months. Volume is heavier on the right peak than the left. Finally, the decline to the confirmation line is a straight-line run; price does not form a third peak. In short, this is a valid double top when price closes below the confirmation line.

How do you trade it? For this trade, imagine that you do not own the stock, nor do you want to sell it short. The S&P 500 index reached a low in October 2002 and bounced, forming a higher low in early March, right when price was bottoming at B. Other stocks in the retail store industry were bottoming at the same time or were completing a bottom retest (a higher low).

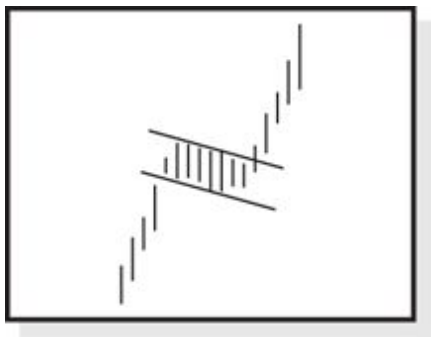
What was clear after the March bottom was that everything started moving up in tandem. The industry started recovering, as did the general market (a new bull run). A buy signal occurred when price closed above the down-sloping trendline. The high volume at B (a common bottom phenomenon) also suggested a bottom—panic selling.

Additional evidence of a major turn comes from points A and B. Point A marks a major turning point for the stock; B, being a higher low, is a retest of that low. Since B did not drop below A, it is a bullish signal.

If you missed the trendline signal and higher low at B, then a close above the double top would be another buy signal. With a 54% average rise for a single busted double top, you have plenty of time to buy. If you bought at the B low, you would have made 73%. Buying at the double top high would have made a profit of 36%. The stock topped out at 44.13, by the way, before tumbling back to 32, near the double top high.

Not all trades will work out as well as this one, and your timing has to be exquisite. A major bull run began after the October low, and the industry responded with large gains. Both helped propel the stock higher. A combination of bullish factors is often what separates a winning trade from a losing one.

34
Flags



RESULTS SNAPSHOT

Appearance: Looks like a short rectangle bounded by two parallel (or nearly parallel) trendlines in a strong price trend (the flagpole).

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bullish continuation	Short-term bullish continuation
Breakeven failure rate	44%	29%
Average rise	9%	10%
Volume trend	Downward	Downward
Percentage meeting price target	46%	53%
See also	Flags, High and Tight; Pennants; Rectangle Bottoms; Rectangle Tops	

Downward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Short-term bearish continuation	Short-term bearish continuation
Breakeven failure rate	45%	18%
Average drop	8%	16%
Volume trend	Downward	Downward
Percentage meeting price target	46%	54%

Small flags appear like roadkill along the price highway. You find them in a fast-moving price trend (flagpole), one that zips along for just a few days. Price pauses at the flag and then continues in the same direction as before encountering the flag (many times). That behavior is not always the case, of course, as price reversals abound, so you should wait for the breakout to be sure.

The Results Snapshot shows the performance statistics. However, I don't rank this pattern for performance because I don't measure the move to the ultimate high or low like I do with traditional chart patterns. I measure the move to the trend end (the nearest minor high or low).

The breakeven failure rates are large and get worse fast, but that's expected; I'll explain that in the Statistics section. The failure rates are not as important as how often price meets the measure rule target.

In theory, flags work as half-staff patterns, meaning they appear midway in the price trend. The Snapshot says that works around half the time. A more accurate measure, using two pattern configurations, says the flag appears later in the price trend than midway except for one case (see Table 34.12).

Tour

Figure 34.1 shows a good example of a flag in a short-term downward price trend. The flag is bounded by two parallel trendlines and is no more than 3 weeks long (often as short as a few days).

You'll see flags appearing in strong uptrends or downtrends (such as that shown in the figure), sometimes near the halfway point of the move. This particular flag goes against the grain in the sense that price retraces the downtrend. This is the most common behavior—a retrace against the prevailing price trend—but it is not unusual for flags to appear horizontal (as short rectangles) or slope downward (following the trend). Since flags can also appear in uptrends, they usually retrace downward, but can be horizontal or tilt upward, too.

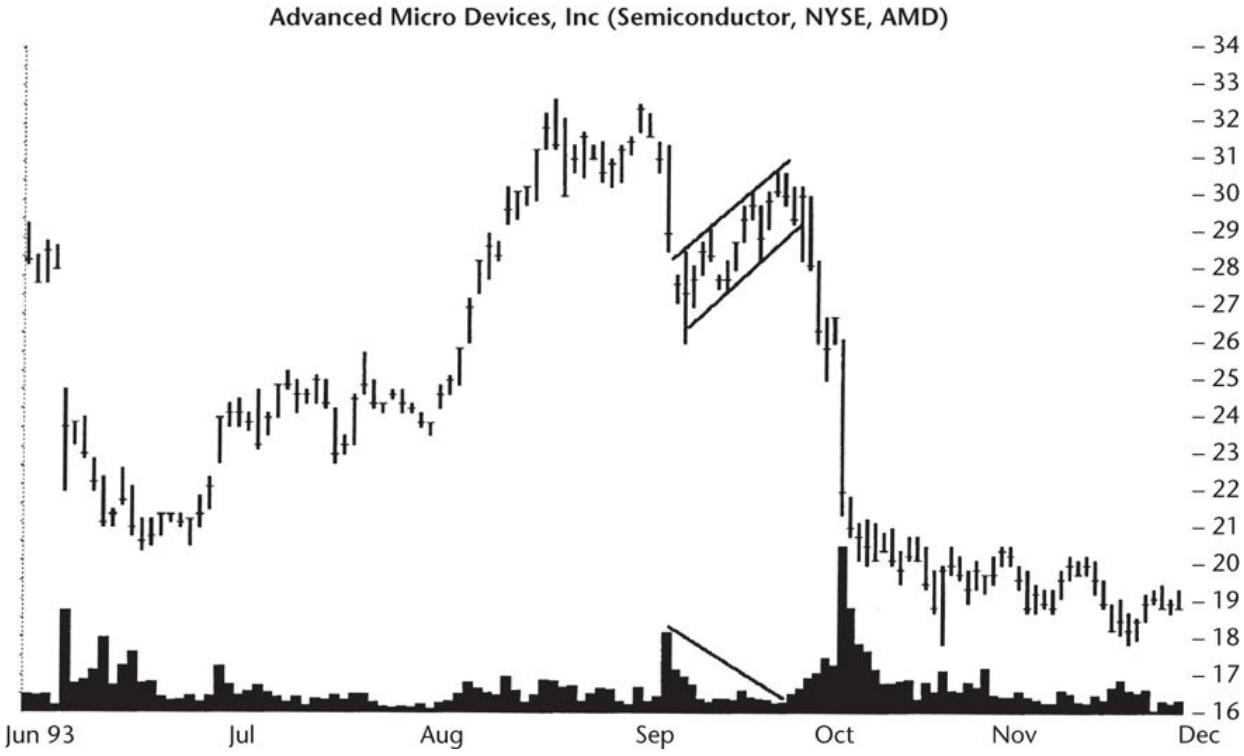


Figure 34.1 A flag bounded by two parallel trendlines usually has a receding volume pattern.

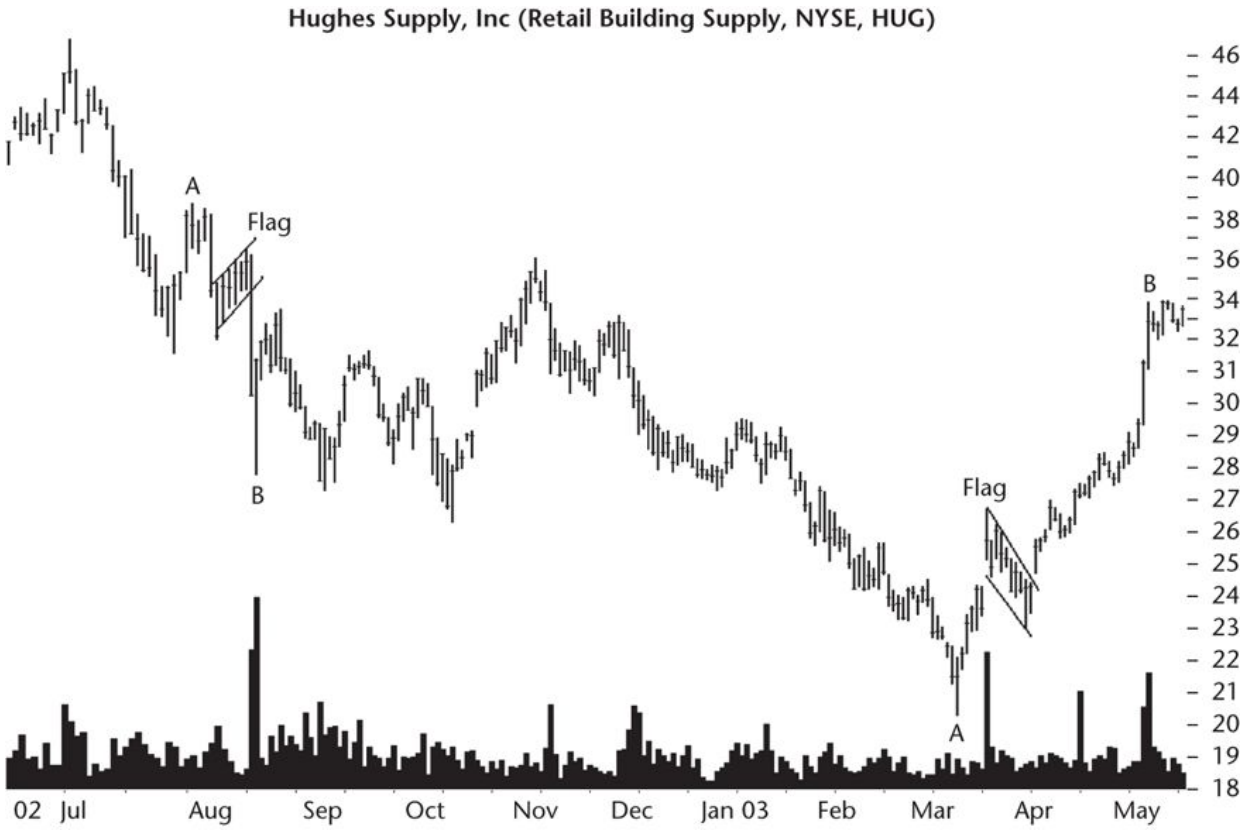


Figure 34.2 Two flags in different price trends help gauge the move from A to B.

Identification Guidelines

Figure 34.2 shows two flags, the first one in a downward price trend and the second after price turns at the bottom. For both flags, the quick price move starts at their respective point As and finishes at their respective point Bs.

In these two examples, the move after the flag is longer than the one before the flag, but that is usually not the case. The move after the flag completes is a key trait of this pattern. By using the length of the trend leading to the flag, you can gauge how far price will move after the breakout.

Table 34.1 outlines the identification characteristics for flags.

Appearance. Two parallel trendlines bound the price action for flags as shown in Figure 34.3. However, the flagpole is an important part of the pattern. If you don't have a flagpole, then I consider the flag invalid. You may decide otherwise. You may enjoy shooting yourself in the foot, too.

Table 34.1 Identification Guidelines

Characteristic	Discussion
Appearance	Flags must have a flagpole, a place where the stock goes nearly vertical and that leads to the flag. Price action bounded by two parallel trendlines becomes the flag. Price usually tilts against the prevailing trend: It rises in a downtrend and falls in an uptrend, but exceptions are common.
Price trend, flagpole	These formations usually form near the midpoint of a steep, quick price trend. If you do not have a flagpole, then ignore the flag.
Volume	Volume usually trends downward throughout the flag. Do not discard a flag because it has an unusual volume trend.
Breakout direction	Can be in any direction.
Duration	Flags are short, from a few days to 3 weeks. Formations longer than 3 weeks are better classified as channels or rectangles.

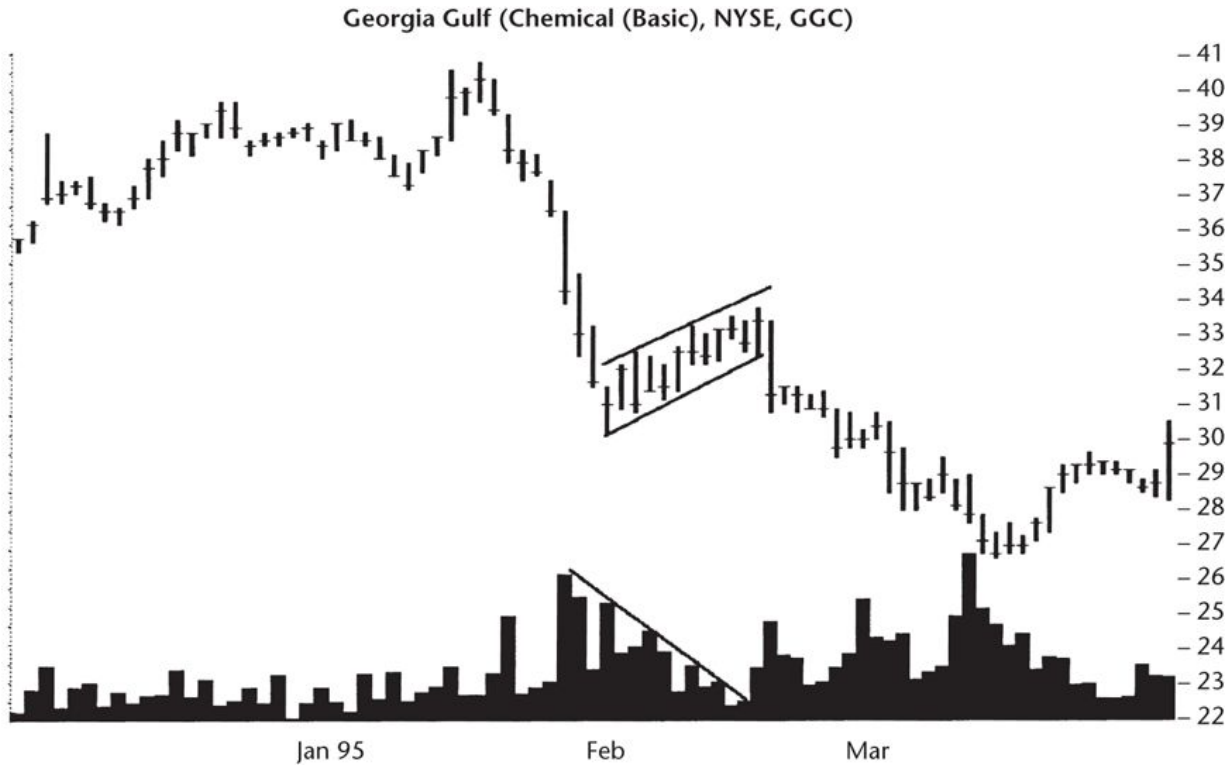


Figure 34.3 This flag appears about midway in a downtrend.

Figure 34.2, for example, has a nice flagpole in the right (March) flag, starting at A. Price rises smartly in a brisk upward move. The left flag (August) I would probably discard because the 1-day price drop leading to the start of the flag isn't long enough. Even so, the flag pattern is pretty, with a nice tight-looking upward retrace.

Price trend, flagpole. Reliable flags appear during steep price trends (forming a flagpole). The trends might be up or down, but price rises or falls quickly, moving several points (depending on the price of the stock—it could be cents, not dollars) in just a few days to a few weeks. In Figure 34.3, for example, the flagpole begins on 18 January and the flag begins on 1 February. In that short time, price tumbles from a high of 40.75 to a low of 30.13.

Notice how the price trend in the flag slopes upward. This behavior is typical for the prevailing price trend (that is, flags typically form against the trend, but not always).

Volume. The volume trend nearly always recedes over the flag portion of the pattern. However, this is not an inviolate rule, but

usually is the case. Don't discard a flag because it has an unusual volume trend.

Breakout direction. Price can break out in any direction, but expect it to follow the prevailing trend. I'll discuss the breakout direction in Table 34.4.

Duration. Flags are short compared to many other chart patterns. In the case of Figure 34.3, the flag is 12 trading days long. Many times when a flag is very short, such as 3 or 4 days, it appears as a horizontal rectangle—a dark blob in the middle of a fast price trend. You may want to clean your eyewear in case it's a spot on the glass.

I limited the length of flags in my study to 3 weeks, but that is an arbitrary limit.

When selecting a flag to trade, the most important guideline is the rapid, steep price trend (flagpole). If price is meandering up or down and forms a flag, then look elsewhere. The flag must be a place where the stock can take a breather from its rapid pace. Price moves against the short-term trend for several days before continuing on (or not).

Focus on Failures

Like all chart patterns, flags are not immune to failure. Figure 34.4 shows a flag failure. The flag, while obeying the confines of the two down-sloping trendlines, has a good volume trend. Price should continue higher after the flag completes but does not. Why?

One explanation is that the flag is just too long at 26 days. Sometimes an excessively long flag suggests an impending failure or a weak price move (after the breakout). Trade flags more than 3 weeks long carefully or pass them up entirely. In this example, the flag is not proportional to the flagpole, suggesting the need for caution trading it.

Figure 34.4 The failure of price to continue rising is probably due to two factors: The price rise leading to the flag is short, and the flag is longer than normal.

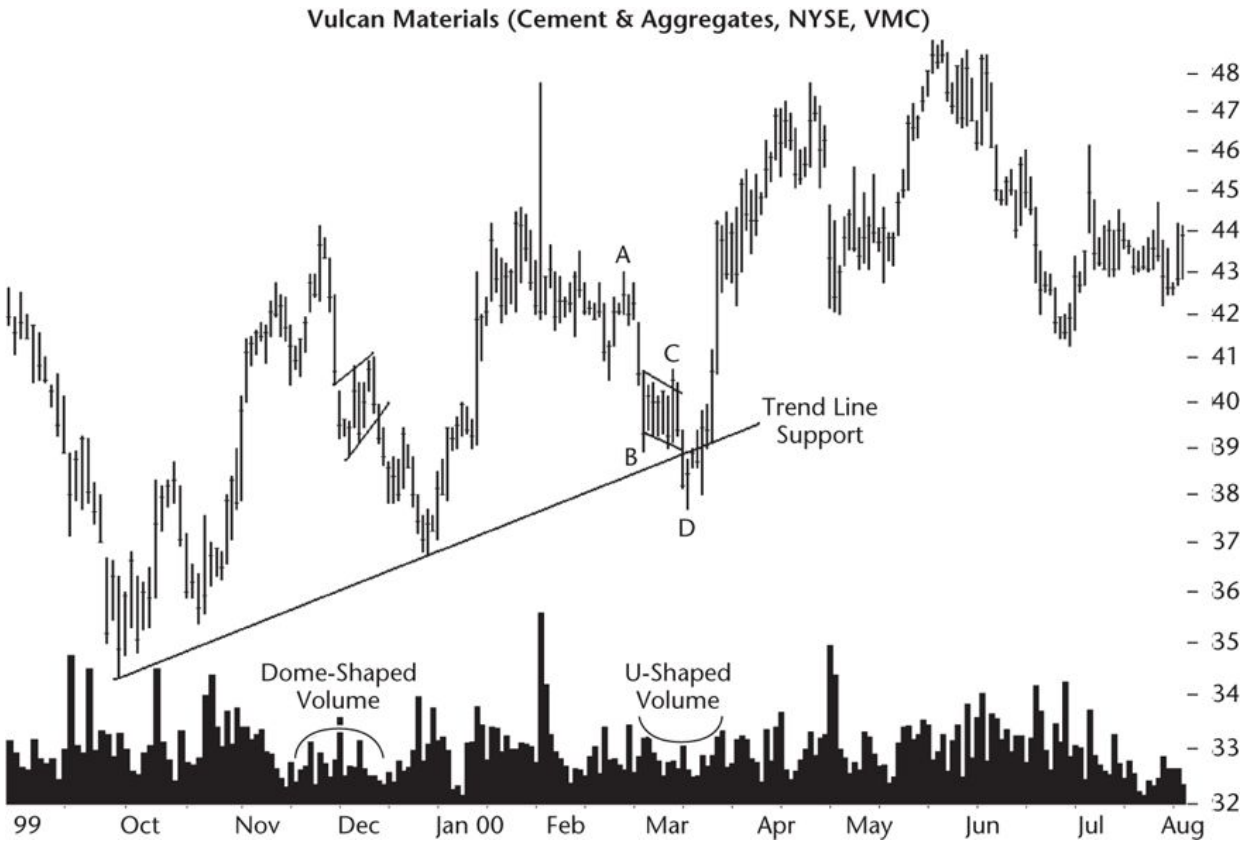


Figure 34.5 The AB run is longer than CD, meaning that the measure rule fails in this example. Support beneath the flag stops the decline.

Figure 34.5 shows a more common failure, one of performance. The decline in the February flag begins at A, 43, and ends at B, 38.90, for a run of 4.10. The decline from C to D measures 3.06. If flags were true half-staff patterns, the two runs would be about equal. Since this is but one example, the Results Snapshot shows that only about half the flags hit their price targets.

In this example, the flag has to chew through trendline support just beneath the flag. The dip is brief, as sometimes happens in trendline pierces, and price recovers only to surge upward, eventually making a new high. Also, the slide from A to B could be more robust (longer), like the down move leading to the November flag.

We'll see in Table 34.11 that when a flag tilts with the price trend (downward in this case in a downward price trend), performance suffers. And that's what we see here with the ABCD pattern.

Statistics

Table 34.2 shows general statistics for flags. The performance statistics do not use the usual ultimate high or low method measure (that is, looking for a 20% trend change). Instead, I looked at the beginning and ending of the price trend (usually the nearest minor high or low after the breakout). Thus, comparing this pattern to other patterns except pennants (which use the same method) is unfair.

Number found. I uncovered 1,278 flags (without really trying) in 462 stocks with the first appearing in October 1991 and the most recent in December 2019. Not all stocks covered the entire period, and some no longer trade. Many flags were just a few days long, and they are a colossal pain to catalog because they are so small and so plentiful.

Table 34.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	573	148	384	173
Reversal (R), continuation (C) occurrence	8% R, 92% C	8% R, 92% C	31% R, 69% C	8% R, 92% C
Reversal, continuation performance	6% R, 10% C	8% R, 10% C	–5% R, –9% C	–7% R, –17% C
Average rise or decline	9%	10%	–8%	–16%
Standard & Poor's 500 change	2%	2%	–2%	–5%
Days to trend high or low	10	8	8	10

Reversal (R), continuation (C) occurrence. Most of the time, a flag acts as a continuation of the prevailing very short-term price

trend. Flags in bull markets with downward breakouts see the most reversals, but continuations still outnumber reversals.

Reversal/continuation performance. The best performance comes from flags in bear markets after downward breakouts that act as continuations. That means price is already dropping before the flag appears.

Because a rising tide lifts all boats, I would expect to see continuation flags in bull markets with upward breakouts also do well. But they perform the same as in bear markets. *Sigh*.

Average rise or decline. If you ignore how the pattern behaves (reversal or continuation) and measure the move from the breakout to the trend end, we see what I consider unusual results. Again, I'm looking for the general market to help performance, but I don't see it (trade with the trend). That would apply to bull markets with upward breakouts (second to worst in performance) and bear markets with downward breakouts (perform best).

Standard & Poor's 500 change. Compare the general market rise or decline by the rise or decline after the flag breakout. Perhaps the large drop in the index in bear markets/down breakouts helped those flags outperform the others.

Days to trend high or low. Because I'm looking for the trend end (and not the ultimate high or low), it's a short time away. Notice that bull market/up breakouts and bear market/down breakouts show slightly longer trends. Those two are the “trade with the trend” columns. The middle two columns are countertrend patterns.

I removed **Table 34.3** showing failure rates because they don't apply to flags. Failure rates are a function of the move to the ultimate high or low and flags measure to the short-term trend end.

Table 34.4 shows breakout-related statistics. You'll notice that throwbacks and pullbacks do not appear in the table. That's because they happen after the trend ends by definition and so don't relate to the performance of the flag.

Breakout direction. The table shows the breakout direction. A breakout occurs when price closes outside of the flag boundary.

Yearly position, performance. Flags with breakouts near the yearly low perform best. Those near the yearly high perform worst, except after upward breakouts in bull markets. There, the middle third of the yearly price range is worst. Just remember that the performance for flags is the move to the trend end, not the ultimate high or low.

Gaps. Only in bear markets after upward breakouts do gaps show a significant performance difference. A flag without a gap tends to perform better in most cases.

Table 34.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	60% up	46% up	40% down	54% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 10%, M 8%, H 9%	L 12%, M 10%, H 9%	L –9%, M –7%, H –5%	L –19%, M –14%, H –7%
Performance with breakout day gap	9%	8%	–7%	–15%
Performance without breakout day gap	9%	11%	–8%	–16%
Average gap size	$0.77	$0.56	$0.96	$0.98

Table 34.5 shows pattern size statistics.

Height. Height is a function of the flag portion of the pattern, not including the flagpole. I measured the height from the top of the flag to the bottom and divided by the breakout price. Flags taller than the median shown in the table outperformed in all cases.

Width. Notice how narrow the median width is. Patterns wider than the median outperform in three of four columns, with bull markets/upward breakouts being the exception. Remember I put a limit of 21 days on flag length.

Height and width combinations. Flags that are both tall and narrow do well in the “trade with the trend” columns (that is, bull market/up breakout and bear market/down breakout). They also show the larger performance differences. Pay attention to the worst-performing combinations when you trade. You'll want to avoid those. Clearly short flags suffer more than tall ones, but check the width, too.

Table 34.6 shows volume-related statistics.

Volume trend. In all cases volume trends downward most of the time. I used linear regression on volume from the start to end of the flag to determine the trend.

Rising/Falling volume, breakout day volume. As you scan across the rows and columns in the table, there is not a great deal of performance difference between the numbers (vertically). For example, rising/falling volume in bear markets after upward breakouts sees no performance difference. Light breakout volume sees a one-percentage-point difference, but that's probably statistically insignificant.

Table 34.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	13%	12%	–10%	–22%
Short pattern performance	5%	8%	–5%	–10%
Median height as a percentage of breakout price	4.3%	6.7%	4.4%	8.8%
Narrow pattern performance	10%	10%	–7%	–15%
Wide pattern performance	9%	11%	–8%	–18%
Median width	9 days	9 days	10 days	8 days
Short and narrow performance	6%	8%	–6%	–9%
Short and wide performance	5%	8%	–5%	–12%
Tall and wide performance	12%	13%	–10%	–21%
Tall and narrow performance	15%	12%	–10%	–23%

Table 34.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	74% down	74% down	77% down	73% down
Rising volume trend performance	9%	10%	–8%	–17%
Falling volume trend performance	10%	10%	–8%	–16%
Heavy breakout volume performance	8%	10%	–7%	–17%
Light breakout volume performance	11%	11%	–8%	–15%

Table 34.7 is supposed to show how often price reaches a stop location. Because I measure the move from the breakout to the trend end (the next-nearest minor high or low), a straight-line run, the stop location will not trigger until after the trend ends. So I removed the table from this chapter. It's not meaningful.

Table 34.8 shows the performance over three decades.

Performance over time. This measures the length of the trend after the breakout in bull markets only. Both breakout directions show the trend shortening over time. It suggests failures will be higher.

Table 34.9 is supposed to show busted pattern performance, but it doesn't apply to flags, so it doesn't appear in this chapter.

Trading Tactics

Consult **Figure 34.6** as I review the tactics listed in **Table 34.10**.

When trading flags, you must first be sure you have a valid formation. Use the identification guidelines outlined in Table 34.1 to ensure that you have correctly identified a flag, including the flagpole.

Measure rule. The measure rule sets the expected price move.

First, determine where the trend begins, which is usually the minor high (for downtrends) or low (for uptrends) preceding the flag (at the base of the flagpole).

Figure 34.6 shows the flagpole beginning at point A, the start of the straight-line downhill run. Subtract the low at the flag start (point B at 42.75) from point A (47.50), giving a height of 4.75. Subtract the height from the high at the formation end (point C at 43) to give the target price of 38.25. Price reaches the target 13 trading days after it moves below the flag trendline.

Notice that I'm calculating each leg using the longest length, from the high price at A to the low price at B and then the high at C to the target. So if the flag slopes in a different direction, you'll still know how to do the math.

Table 34.8 Performance Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	13%	–11%
2000s	11%	–8%
2010s	6%	–6%

Table 34.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Calculate the price difference between the start of the trend (flagpole bottom) and the flag. Price should move at least this amount above (for uptrends) or below (for downtrends) the end of the flag. See text for details.
Wait for breakout	As price moves outside the trendline boundary, place the trade.

How well does the measure rule work? Not very. The Results Snapshot at the beginning of this chapter shows the results in the "Percentage meeting price target" row. Success varies from 46% (bull markets) to 53% or 54% for bear markets. In other words, price reaches the target about half the time.

Use the measure rule to gauge the amount of profit likely from the trade and weigh the amount of profit against the possible risk of failure. Look for support and resistance levels where price trends were repulsed in the past. Many times price will pause or turn around at these junctions. These values become the risk points for a trade. You can compare the risk with the reward by computing the current price with the measure rule target and the first or second level of support or resistance. Adjust the profit potential to use the anticipated entry price (the measure rule uses the top of the flag on the last day, but your entry price will use the bottom of the flag).

For the stock shown in Figure 34.6, the target is 38.25 (as calculated above), but the entry price is the bottom of the flag, or 42.49 (a penny below the flag bottom) for a potential reward of 4.24 (that is, 42.49 – 38.25). The first resistance level is at 44, and there is another at 45 (assuming the trade goes against you and price rises). A stop placed at 44.13 or so, slightly above the first resistance level, works well.

Wait for breakout. Take a position in the stock as it breaks out (as price moves outside the flag boundary). If you're swing trading the flag, it's important to get into the trade quickly because the potential gains are small. I would place an order to enter the trade at the flag trendline and monitor the trade closely.

Once price nears the target, as predicted by the measure rule, consider closing out the trade. Since the statistics regarding the success of meeting the predicted price target are poor, be ready to close out the trade sooner than expected. If you wait for price to reach the target, you might turn a profitable trade into a losing one by holding too long.

Table 34.11 shows how flag tilt affects performance. The flag in Figure 34.1 slopes upward (tilts upward). The flag in Figure 34.4 tilts downward. I found that when the flag tilts against the price trend, performance improves.

Table 34.11 Flag Tilt

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tilt up, performance	6%	8%	–8%	–17%
Tilt down, performance	10%	11%	–6%	–13%

Table 34.12 Special Features

Description	Bull Market	Bear Market
Rising price trend, upward breakout, downward flag tilt		
Flagpole days	15	12
Breakout to trend end, days	12	10
Flagpole price move	19%	24%
Breakout to trend end, price move	17%	21%
Time multiplier	44%	45%
Price multiplier	47%	47%
Falling price trend, downward breakout, upward flag tilt (below)		
Flagpole days	14	14
Breakout to trend end, days	10	12
Flagpole price move	13%	21%
Breakout to trend end, price move	15%	26%
Time multiplier	42%	46%
Price multiplier	54%	55%

For example, in a bull market after an upward breakout, if a flag tilts upward (following the upward price trend), the stock sees an average rise of 6%. Flags that tilt against the upward trend see price rise 10%. Notice that upward breakouts do best with down-tilting flags and downward breakouts do best with up-tilting flags. Both cases do best when the flag tilts against the short-term price trend.

Table 34.12 takes a magnifying glass to the move before and after the flag. For two continuation patterns (rising price trend with an upward breakout and a downward-tilting flag, and the reverse, falling price trend, downward breakout, and upward-tilting flag) I measured the price and time moves.

Let's talk about the bull market results for the first continuation pattern, and you can apply the same logic to bear markets and the second continuation pattern.

Time move. If we expect the flag to be in the middle of the trend, I found that's not true. The flagpole averaged 15 days long, but the move from the breakout to trend end was 12 days long. So expect a quicker end to the move after the breakout.

Price move. I measured the same two legs (flagpole move and flag breakout to trend end). I found that the flagpole saw price move 19%. After the breakout, price moved less, 17%.

Multipliers. This item uses the results of the prior rows to figure out how much to multiply the flagpole to get a better estimate of how long and how far the stock might move.

For example, suppose you see a flag with a flagpole height of $5 in a stock trading at $26. The flagpole is 5/26 or 19% of the current price. I know from the table that the average move after the flagpole ends is 17% along a combined height of 19% + 17% or 36% high. So 17/36 is 47%.

If I take 47% of $5 and add it to the breakout price, I should get a better estimate of how far price might rise. If the breakout is at $25 (price retraced a dollar in the flag before breaking out upward), the target would be 25 + $5 × 47% or 27.35. Clear as mud?

How long will it take to reach the target? Say it took 11 days to rise to the top of the flagpole. The time multiplier is 12/(15 + 12) or 44%. So I'd take 44% of 11 days (which is 5 days, rounded up) and that's what I would add to the breakout date. If it's a weekend, then you can use either Friday or Monday as the target.

Experience

I've entered trades a number of times using flags but few times have I traded it like a flag (using the measure rule as a target). Here's what I learned. It assumes the flagpole is upward and flag tilt is downward.

- After the flag becomes recognizable (like a week after the flagpole), place a buy order at the bottom of the flag. If the flag breaks out upward, you get in sooner than if you place a buy order at the top flag trendline or if you wait for a close above the flagpole high (either work, but you cut potential profit). I used this entry method a few times with success, but once the flag broke out downward and I suffered a loss. A downward breakout is a risk with this early entry mechanism.
- Don't wait for price to close above the top flag trendline and enter at the opening price the next day. Why? Because it's too late. If a flag works like it's supposed to (which is rare), when price breaks out upward, it starts a strong push upward. So waiting a day means you could be halfway to the target. So use a buy stop a penny above the top flag trendline (or at another location, as discussed above).
- Place a sell order at the target. With short-term trades, such as with flags, the stock could hit the measure rule target and then drop thereafter (I've seen that a lot). If you have an order to sell waiting at or near the target, you can get out on time. I had one flag trade where it reached the measure rule target (one of the few), but I didn't sell until the next day and gave back too much profit. The stock continued lower, too.
- It will be rare for the stock to reach the target before a significant retrace. Many of the flags I looked at didn't follow through with a straight-line push higher to the target. They meandered higher instead.
- If price breaks out upward rising from the flag but then closes below the bottom of the flag, sell. The stock will likely continue lower. I had that happen twice and lost money after the reversal. Keep the stop tight after an upward breakout.

- Plan for the stock to miss the measure rule target. I see this often in flags. Of course, the Results Snapshot says price will reach the target only 46% of the time in bull markets, where I like to use flags. Try computing the measure rule target but use something like 75% of the flagpole height projected upward to get a more conservative (closer) target.

Sample Trade

Let us say you are considering shorting the stock shown in Figure 34.6. Since the price trend is downward in a bull market, the Results Snapshot says that 46% of the flags will meet their price targets on average. That is a poor showing and deserves caution.

As the flag forms, you monitor the price closely by not only charting the end-of-day price but also checking it midday. When you dial into your broker for a lunchtime price quote and discover that price has moved outside the bottom trendline, you decide to pull the trigger. You sell short and receive a fill at 42 (most of the way down price bar C), just above the closing price of 41.50. (Note: An order to enter the trade a penny below the flag low, 42.49, would have worked well in this situation, but sometimes setting the entry price can be difficult if the flag is loose-looking).

You follow the stock closely as price declines. Looking back through the prior year's trading history, you discover two support levels at about 40 and 39. You believe that the stock will fall through the first support level but the second one may be more difficult. It is, after all, closer to the 38.25 target price and more robust than the first level.

When the stock moves sideways at the first support level, you check your work and reexamine the fundamentals and technical indicators. Everything seems good, so you remain in the trade.

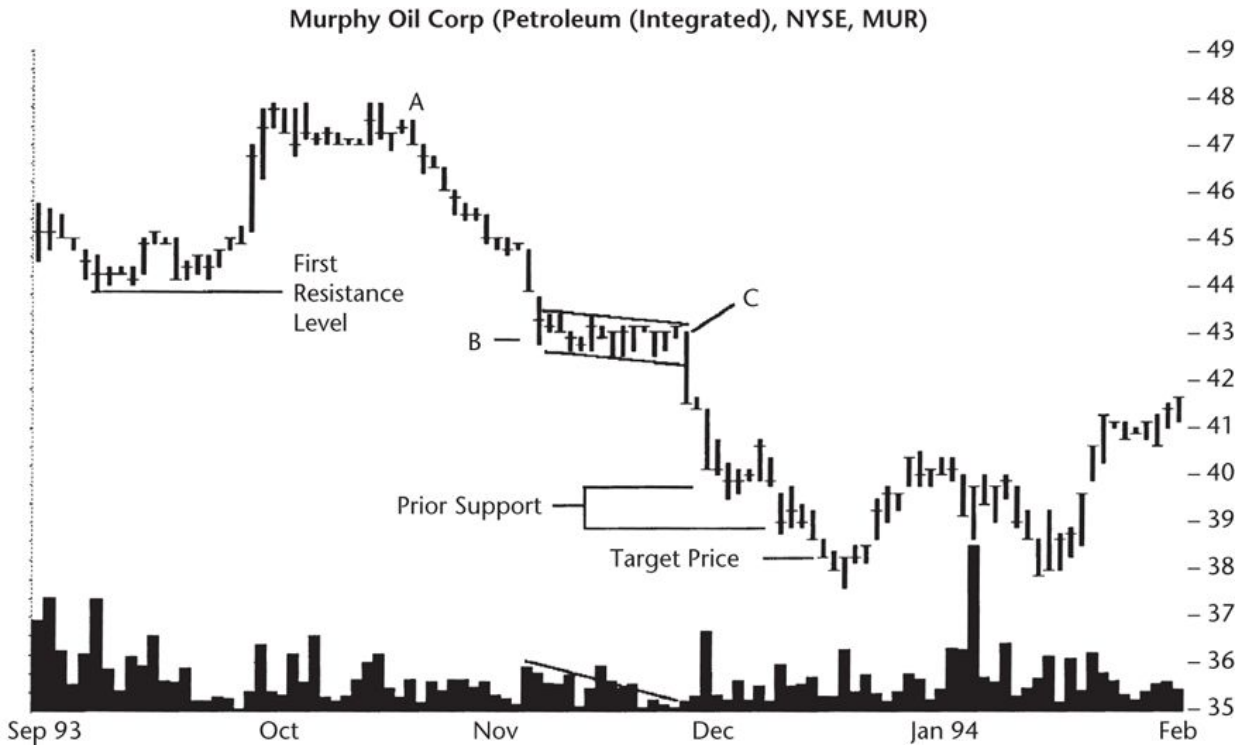
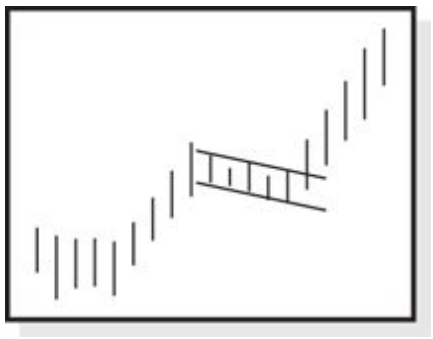


Figure 34.6 Use the measure rule to gauge the decline in this stock. Take the difference between the prior minor high (point A) to the formation low at the start (point B). Subtract the height from the high at the formation end (point C), and the result is the target.

Eventually the stock pierces the first support level and declines to the second one, where it gets stuck. It closes at 39 but the next day moves up. So the following day you decide to close out your position, believing that the risk of a price rise far exceeds the possible gain. Your short sale covers at 39, and you receive almost $3 a share. That is not a bad profit for a hold time of just 2 weeks. On an annualized basis, the return is ... wonderful!

35
Flags, High and Tight



RESULTS SNAPSHOT

Appearance: After a stock doubles in price, a consolidation region of several days to several weeks long appears, followed by an upward breakout.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bullish continuation	Short-term bullish continuation
Performance rank	30 out of 39	15 out of 20
Breakeven failure rate	15%	20%
Average rise	39%	25%
Volume trend	Downward	Downward
Throwbacks	67%	68%
Percentage meeting price target	82%	78%
See also	Flags, pennants	

It seems that as soon as the second edition of this book came out and proclaimed that the high, tight flag was the best performing chart pattern in both bull and bear markets, the chart pattern stopped working. Now, performance ranks near the bottom of the list: 30 out of 39, where 1 is best (bull market).

I noticed the performance decline but suffered through losses until I figured out this pattern didn't work. I'd see price climb 10% to 15% after a breakout and then collapse. After a bear market, I'd see price double, form the flag pattern, and either die right then or rise by the same 10% or 15% before collapsing.

During the Covid-19 pandemic of 2020, we saw the same behavior. I warned readers of my blog not to trade this pattern. And I was right. I think I saw one flag perform as expected, but dozens of others failed.

Let's take a tour to see what the pattern looks like.

Tour

Figure 35.1 shows a classic example of a high, tight flag. The quick rise from the low point at 14 to the flag high at 30.75 took less than 2 months. The volume trend was downward throughout the chart pattern. After a slight pause, the stock continued rising. In another 2 months, it reached a peak of 120. That's the way the pattern used to work in the glory days of the 1990s.

The high, tight flag is a momentum play (buy high, sell higher). When a stock doubles in a short time, it usually takes a breather and consolidates. When it does, it gives the trader the opportunity to buy the stock before the rise resumes. How do you correctly identify a high, tight flag?

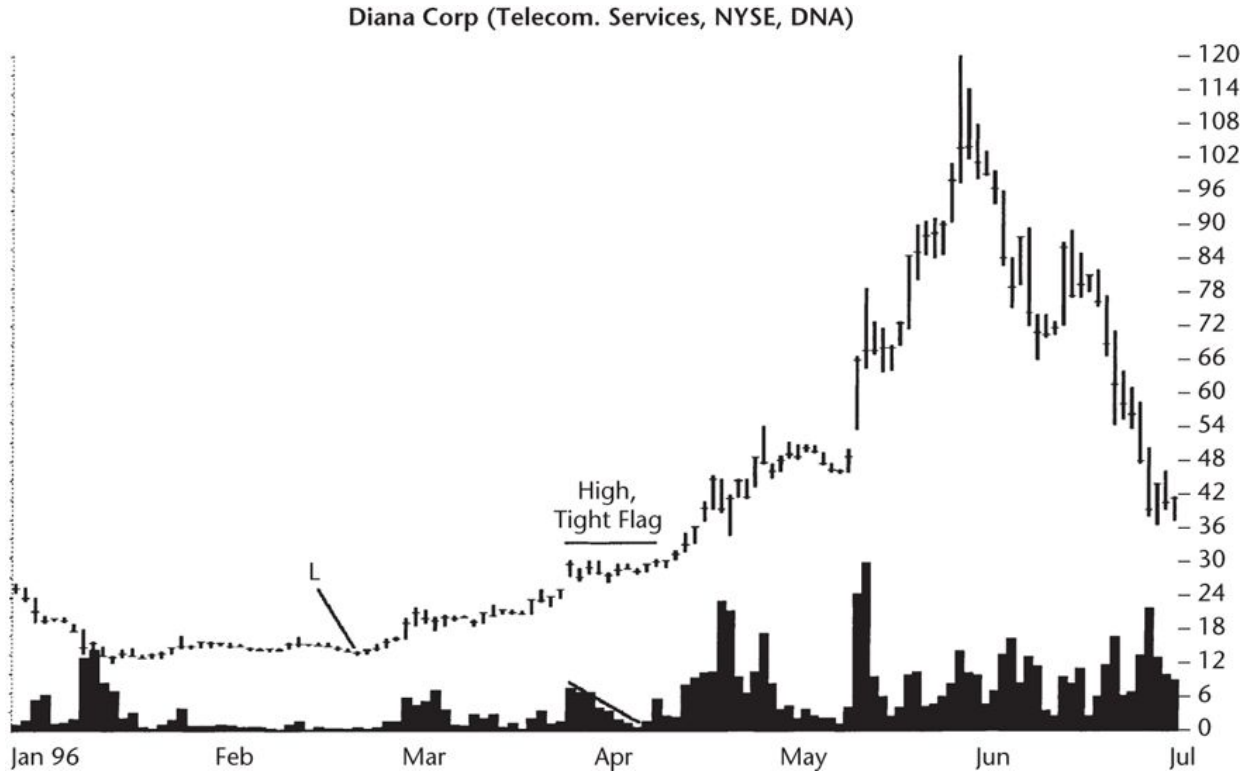


Figure 35.1 A high, tight flag that sees price rise from about 30 to 120 in 2 months.

Identification Guidelines

The phrase, *high, tight flag*, is a misnomer because the pattern usually does not resemble a flag at all. Sometimes price moves up slightly as the flag progresses, such as shown in Figure 35.1, but more often price spikes down briefly (a day or two), then returns and moves downward or horizontally before breaking out and heading up.

William J. O'Neil popularized the pattern in his book, *How to Make Money in Stocks* (McGraw-Hill, 1988). In his introduction to the pattern, he identifies many characteristics that high, tight flags share.

Briefly, O'Neil looked for a doubling of the stock price in less than 2 months, a sideways move of 3 to 5 weeks during creation of the flag, with price drifting down no more than 20% in the flag. The guidelines eliminated many patterns so that fewer than 10% (of the ones I looked at) qualified. I followed none of his guidelines. I prefer to let the pattern tell me how it behaves.

I programmed my computer to identify all stocks that had a minimum price rise of 100% in 2 months or less. Then I manually went through each stock and looked for a nearby consolidation region. If the region was close to the 100% price gain, then I accepted it as a high, tight flag.

For example, the figure passes all the O'Neil guidelines, whereas **Figure 35.2** does not (if you apply them strictly). The stock reaches a low of 5.25 in early July (L) then starts moving up. In early September, it reaches a price of 10.25, just shy of doubling. Admittedly, the 95% price gain is less than a strict interpretation of the O'Neil guidelines, but it comes close.

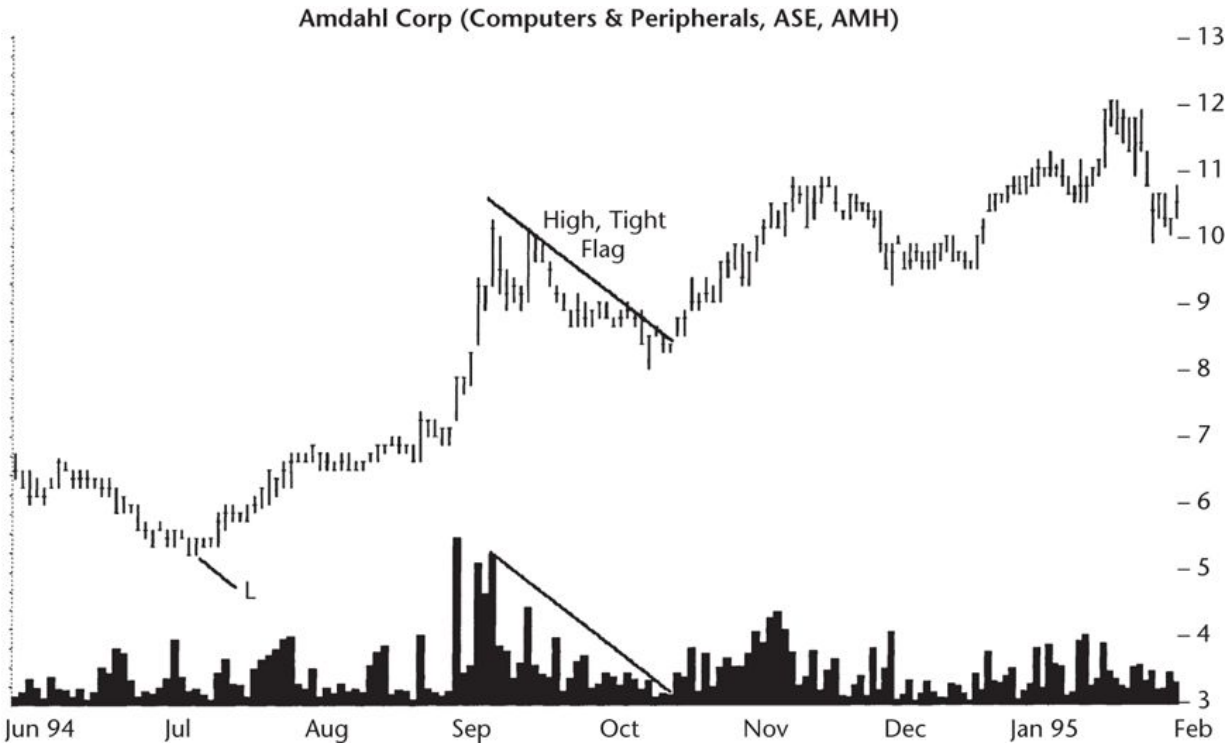


Figure 35.2 This high, tight flag looks loose, but price performs well, rising 33% above the highest high in early September.

Table 35.1 Identification Guidelines

Characteristic	Discussion
Appearance	A rise lasting no more than 2 months carries price upward at least 90% (shoot for a doubling of the stock price). This is the flagpole. Price pauses and consolidates when building the flag portion and then breaks out upward.
Flag consolidation	Locate a consolidation area after the flagpole, where price pauses. This is the flag.
Volume	The volume trend in the flag should be receding for best performance.
Breakout direction	Upward. Don't trade this if price fails to close above the flag/flagpole high.
Duration	Price has to double or near double in 2 months or less.

The high, tight flag slopes downward for 38 days, 3 more days than the maximum, and declines by 22%, two percentage points over the threshold. You could argue that the numbers are close enough to the O'Neil guidelines to qualify as a high, tight flag. I accept it as a valid pattern. The stock climbed 28% before dropping by 20%.

Table 35.1 shows the guidelines I used in selecting and evaluating high, tight flags.

Appearance. Look for a short, quick rise. By that, I mean a rise in which price nearly doubles in 2 months or less. It can move up more than that, and the rise need not take place from a flat base (horizontal price movement). In the high, tight flags I found, I looked for a doubling of the price in 2 months and then let my computer determine when the trend started (see "Trend Start" in the Glossary for details).

You will want to avoid price trends where the trend in the month or two leading to the start of the flagpole is steep (either up or down). Shallow inbound trends are best. I'll discuss this in the Experience section.

Flag consolidation. Once we have a tall flagpole (a doubling of price in two months or less), look for a consolidation area to form. In my selections, I did not care how long the stock consolidated nor how far the flag descended before turning upward. All that mattered was that the consolidation area was plainly visible to the casual observer.

Volume. The final identification guideline is not really for identification as much as it is for performance. Flags with receding volume outperform those without. However, I would not ignore a high, tight flag simply because volume is rising. Rather, I would recognize that performance may suffer.

Breakout direction. The breakout is upward by definition. If the stock breaks out of the flag (consolidation area) downward, then look elsewhere. I prefer to wait for price to close above the top of the flagpole before taking a position.

Duration. Price must double in 2 months or less. That doubling becomes the flagpole.

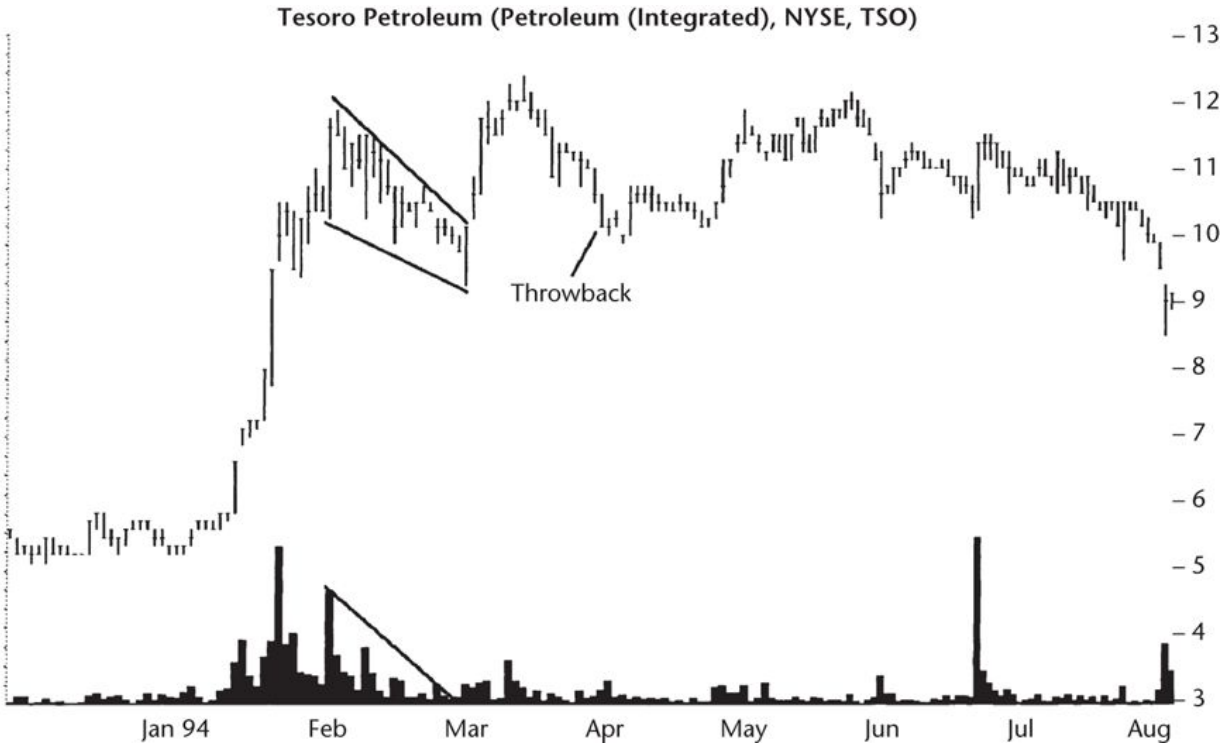


Figure 35.3 A failure of a high, tight flag. Price fails to continue moving up very far before heading down in failure.

Focus on Failures

Investing in a stock showing a high, tight flag is not without risk. **Figure 35.3** shows a quick, nearly vertical rise (the flagpole), leading to creation of the flag. As the rise falters, high volume tapers off. When price heads lower in the flag portion of the pattern (marked in this case by two down-sloping trendlines), volume recedes. That's how it should be in well-behaved patterns.

The flag drifts lower for almost a month before price breaks out of the trend and resumes rising. After climbing for just over a week to a new high, the stock curls around and meanders lower. It throws back to near the base of the flag and then moves horizontally for several months before dropping lower again.

The figure shows a flag that suffers from a small rise, and it's typical of this pattern's failure. After price breaks out of the flag upward, it is supposed to double again. However, in this case, price stops rising just above the flagpole high.

In my analysis of this pattern, I found that 38% will fail in this manner. However, a bunch of potential high, tight flags never get this far. The second type of failure for this pattern is the failure to break out upward. As I mentioned, I see that a lot. It's why I suggest traders not only wait for price to close above the flag, but to close above the flagpole, too.

Statistics

Table 35.2 shows general statistics.

Table 35.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,028	394
Reversal (R), continuation (C) occurrence	100% C	100% C
Average rise	39%	25%
Standard & Poor's 500 change	5%	1%
Days to ultimate high	43	25
How many change trend?	55%	42%

Number found. I found 1,422 high, tight flags in 578 stocks with the first pattern appearing in February 1991 and the most recent December 2019. Note that I did not log the Covid-19 failures in this edition because some haven't reached the ultimate high yet.

Reversal (R), continuation (C) occurrence. Since I was looking for an upward breakout (only) after a sharp price rise (the flagpole), each flag acted as a continuation of the prevailing price trend.

Average rise. The average rise measured from the breakout price (often it's the opening price the day after price closed above the flagpole high) to the ultimate high.

Standard & Poor's 500 change. The S&P climbed a bit as measured from the high, tight flag's breakout day to the date of the ultimate high. Notice that a strong market uptrend tends to push price higher (that is, the average rise is higher in bull markets than bear markets). If you're starving for clichés, then I have two: A rising tide lifts all boats and trade with the (market) trend.

Days to ultimate high. High, tight flags are rockets, reaching the ultimate high in about a month to 6 weeks on average. The median is just 18 days. That's fast.

How many change trend? This is a measure of how many flags see price rise more than 20% after the breakout. I consider values more than 50% to be good, but 55% is the average for all bullish chart patterns. Bear markets fall short of the average made by all other chart pattern types (which see 46% rising more than 20%).

Table 35.3 shows failure rates for high, tight flags. I found that 15% of the patterns will fail to see price rise more than 5% after a bull market breakout. Over a third (38%) will fail to see price rise more than 15%. This is the kill zone, a rise of 10% to 15% where I've noticed a lot of the patterns die.

Table 35.4 shows breakout-related statistics for flags.

Breakout direction. By definition, the breakout is always upward. If price closes below the bottom of the flag, then that's a downward breakout. Ignore the pattern. It's a high, tight flag that's failed.

Table 35.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	155 or 15%	77 or 20%
10	129 or 28%	66 or 36%
15	108 or 38%	45 or 48%
20	75 or 45%	39 or 58%
25	72 or 52%	32 or 66%
30	56 or 58%	22 or 71%
35	54 or 63%	22 or 77%
50	119 or 75%	39 or 87%
75	129 or 87%	34 or 95%
Over 75	131 or 100%	18 or 100%

Table 35.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 40%, M 28%, H 43%	L 27%, M 20%, H 27%
Throwbacks occurrence	67%	68%
Average time to throwback peaks	11% in 6 days	12% in 6 days
Average time to throwback ends	11 days	12 days
Average rise for patterns with throwbacks	35%	22%
Average rise for patterns without throwbacks	47%	29%
Percentage price resumes trend	52%	39%
Performance with breakout day gap	39%	28%
Performance without breakout day gap	38%	24%
Average gap size	$0.60	$0.68

Yearly position, performance. Where in the yearly price range do the best performing flags reside? Those patterns with breakouts within a third of the yearly high tend to perform best in both bull and bear markets. Avoid flags with breakouts in the middle third of the yearly high–low range.

Throwbacks. Throwbacks occur over two-thirds of the time and take between 11 and 12 days, on average, to return to the breakout price. When a throwback occurs, performance suffers (which is typical for many other chart pattern types, too).

After a throwback completes, price resumes rising between 39% and 52% of the time. Those results don't exactly inspire confidence that price will make a determined push higher.

Gaps. A gap that appears on the day of breakout helps performance. In bull markets, the extra push is only one percentage point, but in

bear markets, the performance difference is wider: four percentage points. Because I tabulate performance using the opening price the day *after* a gap appears, you can participate in the performance by buying the stock after the gap.

Table 35.5 shows pattern size statistics.

Height. There's not a substantial performance difference between short or tall flag patterns. Height, in this case, does *not* include the flagpole. It's just a measure of the high–low range of the flag.

Width. Width measures from the start of the flagpole (the trend start) to the end of the flag. In both markets, wide patterns do better than short ones. I used the median length as the separator between narrow and wide.

Height and width combinations. I looked at the combinations of height and width and found no consistent trend from bull to bear markets except that tall and narrow patterns performed worst. You'll want to avoid those.

Table 35.6 shows volume-related statistics.

Volume trend. Volume trends downward most often (more than 80% of the time). That's probably because volume tends to spike during the creation of the flagpole and diminishes in the flag.

Rising/Falling volume, breakout day volume. Again, there's no consistent performance difference between bull and bear markets. However, the performance differences per market can be wide enough that you'll want to pay attention to rising/falling volume or heavy/light breakout day volume in each market (bull or bear).

Table 35.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	38%	25%
Short pattern performance	39%	25%
Median height as a percentage of breakout price	14.8%	15.7%
Narrow pattern performance	36%	23%
Wide pattern performance	41%	26%
Median width	60 days	55 days
Short and narrow performance	37%	24%
Short and wide performance	42%	26%
Tall and wide performance	40%	27%
Tall and narrow performance	35%	22%

Table 35.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	84% down	80% down
Rising volume trend performance	35%	27%
Falling volume trend performance	39%	24%
Heavy breakout volume performance	37%	26%
Light breakout volume performance	42%	21%

Table 35.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	65%	64%
Middle	0%	0%
Pattern bottom	0%	0%
Flag low	5%	3%

Table 35.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	43%
2000s	37%
2010s	33%
Performance (above), Failures (below)	
1990s	14%
2000s	14%
2010s	21%

For example, in bull markets, patterns with falling volume and light breakout day volume do better than the other combinations.

Table 35.7 shows how often price reaches a stop location. Because the stock doubles in the flagpole, you probably won't see price make it back down to the middle or the bottom of the flagpole (I'm using the entire height of the pattern here, from start of the flagpole to flag end).

I did measure how often price touched the bottom of the flag, and the table shows the results. The flag is a good place to hide a stop-loss order, providing it's not too far away from the entry price.

Table 35.8 shows the performance over three decades.

Table 35.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the rise leading to the flag and project half of it upward, using the flag low price. The bottom portion of the table shows how often the measure rule works.
Flagpole top	Wait for price to close above the top of the pattern (often the flagpole).
Stop location	Below the bottom of the flag works well. See Table 35.7.

Description	Bull Market	Bear Market
Percentage reaching half height target	82%	78%
Percentage reaching full height target	44%	29%
Percentage reaching 2× height	12%	6%
Percentage reaching 3× height	5%	1%

Performance over time. This shows how pattern performance has deteriorated over time. It performed much better in the 1990s than it did in the 2010s.

Failures over time. Failure rates were constant for 2 decades but rose by 50% (from 14% to 21%) in the 2010s.

I did not include **Table 35.9** because the pattern is too tall to bust (too few samples).

Trading Tactics

Table 35.10 shows trading tactics.

Measure rule, targets. Use the measure rule to predict a target price. To calculate the price target, find where the trend starts (the bottom of the flagpole) and measure the price change from the low at the start to the highest high in the pattern, often the top of the flagpole. Divide the result in half and add it to the flag's low price. The result is the target.

The bottom portion of the table shows how often various heights used in the computation work. Using half the pattern's height (as suggested above), we see the measure rule works between 78% and 82% of the time. Using taller heights means a lower success rate but more potential profit if price rises that far.

Flagpole top. I highly recommend you wait for price to close above the top of the flagpole (top of the pattern, really). Why? Because I've seen too many patterns where price breaks out upward from the flag and reverses before reaching the flagpole top. You want to give price every opportunity to reach a new high, so wait for the stock to clear the top of the pattern.

Stop location. The bottom of the flag makes for a delicious stop location. See Table 35.7 for details.

Experience

No single failure type stands out in my trades. However, I did notice that the pattern failed to live up to expectations, that of price doubling after the breakout. In several trades, I saw price climb by 20% (or less), reverse, and make a substantial decline.

- Lesson: Don't expect price to double after the breakout.

I was stopped out of several trades by entering before price closed above the top of the flagpole (that is, price left the flag boundary but reversed before closing above the flagpole top). I learned to wait for a better entry, a close above the flagpole high.

- Lesson: Wait for price to close above the top of the pattern and then buy.

With other trades, I made a good entry and the pattern just didn't deliver. However, I did have success with one, and I wrote an article about it (a trade in Insteel Industries (IIIN)). The stock climbed smartly after the breakout and paused along the way upward. I thought the uptrend was about to end, so I sold my position for a 28% gain. If I had hung in there, I'd have made (best case) 93%, or almost double my money. That would have been a perfect trade, and so you can see what the difference is between a perfect trade and real-world results.

I researched how the pattern behaved as we came out of the 2009 bear market. Stocks doubled in price, and that's as far as they got. Now, in mid-2020, I see the same pattern. I see dozens of high, tight flags where price has doubled from the March 2020 low, which are now failing to climb. With some, it's too soon to see where the ultimate high is. With others, price rises by a few percent and then collapses.

- Lesson: After bear markets, you'll see lots of high, tight flags that fail to breakout upward, or if they do, the rise is meager.

I conducted a study of the slope of the inbound price trend in the month or two before the start of the high, tight flag. I found that if the

slope was shallow, either up or down, performance was good. If the inbound trend over that month or two was steep, either steep up or steep down, then performance was bad. The best combination was a shallow drop over 1 month leading to the start of the flagpole. In second place, just one percentage point behind in performance, was a 1-month shallow up move leading to the start of the flagpole.

In other words, a shallow inbound price trend leading to the bottom of the flagpole is good. You'll want to avoid steep inbound price trends. What we're seeing now in the markets after a steep plunge in the market indices is many high, tight flags that fail to perform as expected. They have a steep inbound price trend.

- Lesson: Avoid trading a high, tight flag that has a steep inbound price trend leading to the start of the flagpole. A shallow drop of 1 month leading to the start of the flagpole is best.

Sample Trade

When John spotted the high, tight flag shown in **Figure 35.4**, he wasted no time in taking a position, buying when price pierced the upper trendline at point A. He placed a stop 13 cents below the formation low at 5.63. Two days later, he was stopped out.

“A billion here, a billion there, and pretty soon you're talking real money!” he said.

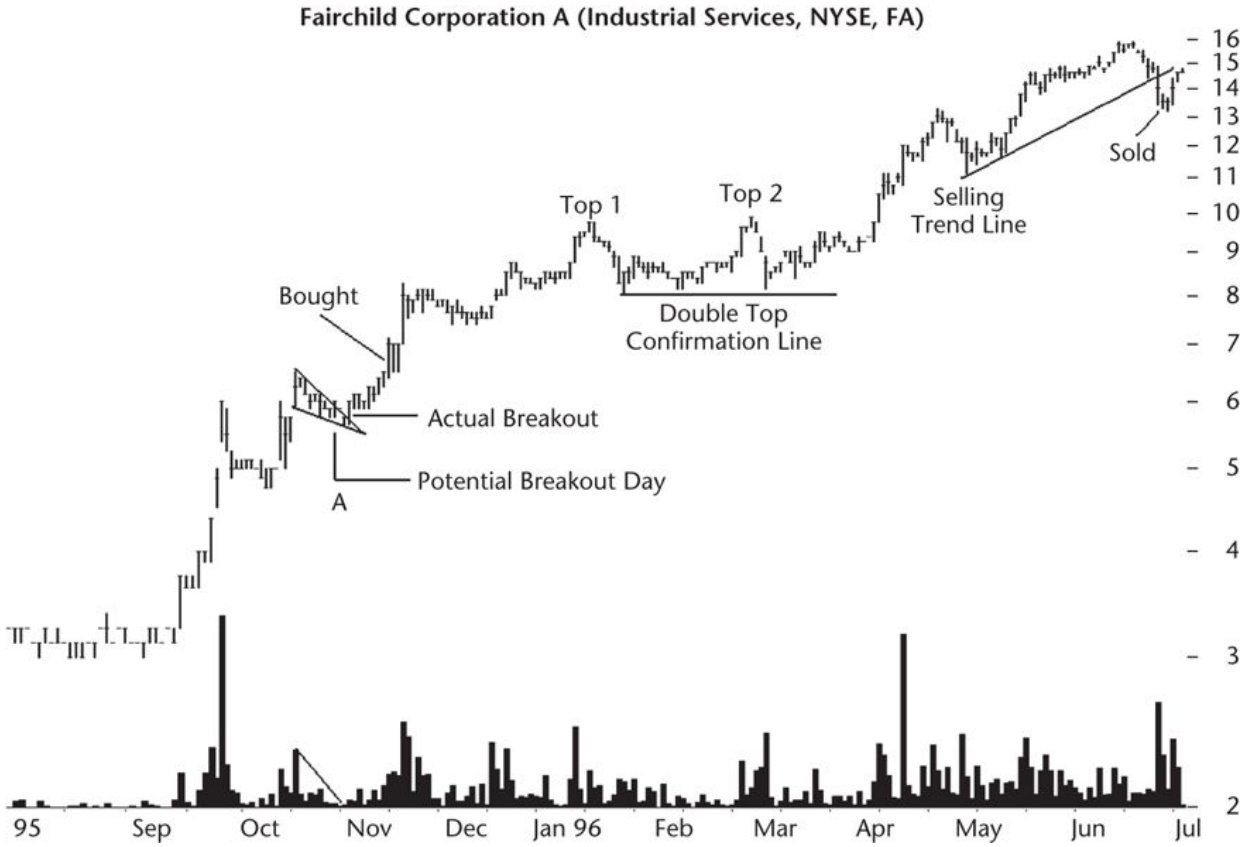


Figure 35.4 A high, tight flag with price stair-stepping higher. How do you trade this high, tight flag?

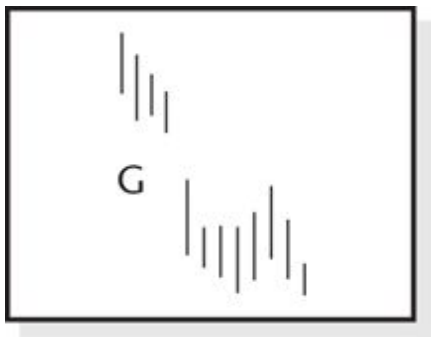
He backed off for a few days and waited for the stock to climb above the flagpole top (6.50). When it did, he piled into the stock again at 6.50. He considered the bottom of the flag a support area, so that is the price he used as his stop loss. This time, however, he used a mental stop, one that is not placed with a broker but kept in his head. There is really no problem with a mental stop, providing an investor or trader is willing to sell should price hit the stop.

Now and again, John looked at the price chart just to see how the trade was doing. The stock climbed to a support zone at 8 and went horizontal for 3 months. Toward the end of that time, he raised his mental stop to 7.75.

The stock climbed again. It ignored the double top formed by peaks in early January and late February, and so did John. By April the stock posted a new high, quietly disclosing that the double top turned out to be false (it never confirmed as a valid chart pattern).

“When the stock passed $13 in mid-April, I started to pay attention. It reached 13.25 and backed off for a bit, sinking to a low of 11.13. Then it spurted up again. I drew a trendline upward following the latest move and when price pierced the line, I got my broker on the blower.” John sold at 13.63, not close to the high of 15.88, but “close enough for government work.” After commissions, he made 108% in slightly less than 8 months.

36
Gaps



RESULTS SNAPSHOT

Appearance: A price gap appears when the current low is higher than the prior high or the current high is below the prior low.

Upward Gaps, Close within a Week

	Bull Market	Bear Market
Area gap	85%	92%
Breakaway gap	1%	8%
Continuation gap	8%	20%
Exhaustion gap	60%	75%

Downward Gaps, Close within a Week

	Bull Market	Bear Market
Area gap	90%	88%
Breakaway gap	1%	0%
Continuation gap	15%	17%
Exhaustion gap	66%	63%

There are six types of gaps, four of which I review in this chapter. The ex-dividend gap is not considered because it rarely has any investment significance. The ex-dividend gap usually occurs in utility stocks or stocks with high-paying dividends. On the day of dividend

distribution, the price sometimes moves downward, leaving a gap on the price chart. Even though the price of the stock after distribution is reduced by the dividend amount, the day's trading range often fills the gap so no actual gap appears on the chart.

The opening gap happens nearly all of the time on intraday stock charts. It is the gap between yesterday's close and today's open. If the gap remains open throughout the day, it can form one of the other gap types (area, breakaway, and so on).

For end-of-day traders, opening gaps don't have much significance. For intraday traders, opening gaps give a day trader the opportunity to make a lot of money quickly, often by fading the gap. For more details, read my book, *Evolution of a trader: Swing and Day Trading* (Wiley, 2013).

In the above Results Snapshot, I show how often the various gap types close within a week. I sorted it not by the breakout direction, but by whether price gaps up or down.

I define *closing the gap* to be when price returns and spans (covers) the gap completely. The area gap closes quickest, with 85% to 92% of those gaps closing within a week (depending on the bull or bear market). At the other end of the scale, we find breakaway gaps rarely (usually 1%) close within a week. In the middle are exhaustion gaps (which close the gap quickly) and continuation gaps (which usually stay open longer than a week).

Tour

Price gaps upward when yesterday's daily high is below today's low price. Price gaps downward when yesterday's low is above today's high. In both cases, some type of exuberance is driving the stock to create a gap (provided the stock is not thinly traded). Sometimes a gap is nothing more than the stock being worth less simply because of a dividend distribution. At other times, the repercussions are more severe. An earnings surprise, either positive or negative, can cause a gap and the stock to rise by 10% or 15% or to decline by 30% or more, depending on the severity of the news.

Figure 36.1 shows a plethora of different gap types. Area gaps occur in congestion zones, often when price is moving sideways. Price gaps up or down, and the gap closes quickly. Of all the gap types, area gaps are common, like potholes on a dirt road.

Breakaway gaps appear at the start of trends. They, too, are quite numerous, and high volume accompanies them. Usually there is some fundamental event driving the stock, creating a breakaway gap.

Continuation gaps are relatively rare because they appear in the middle of strong trends. Those trends themselves do not occur very often and even less often do they contain a gap.

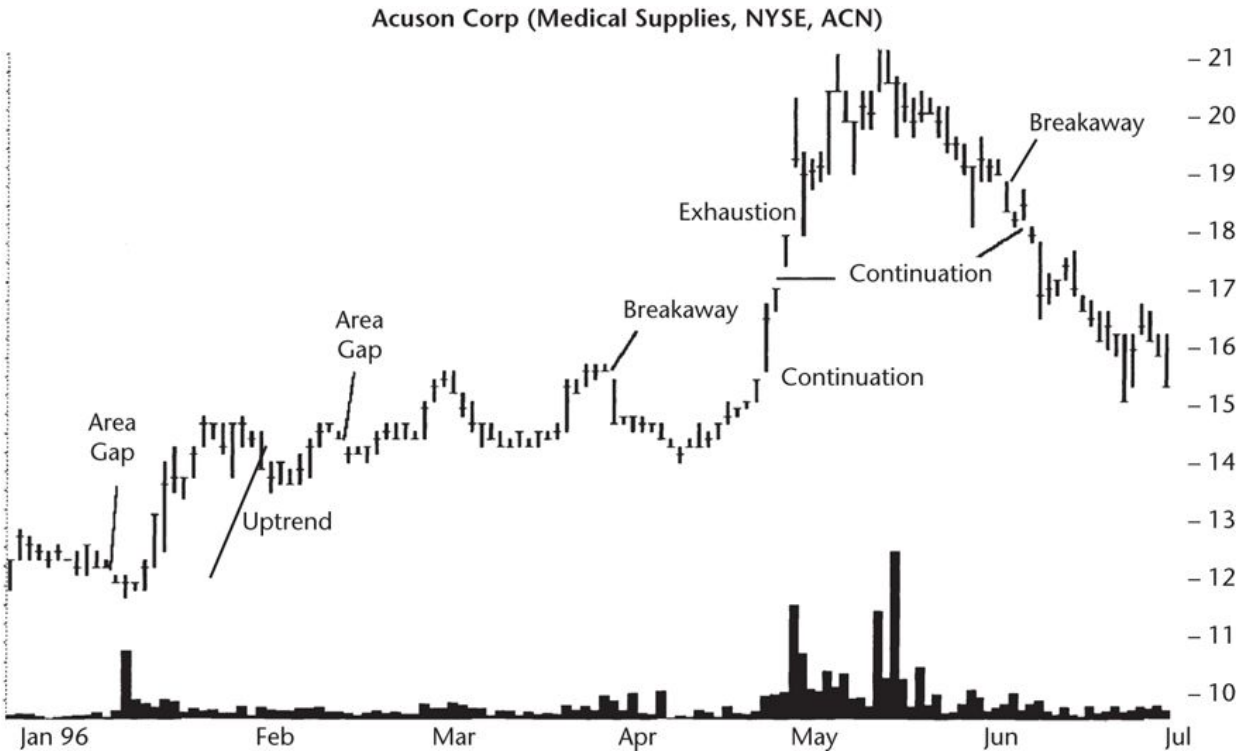


Figure 36.1 Plenty of gaps appear in a daily price chart. The most numerous are the area gaps.

Exhaustion gaps signal the end of trends. They are the last jump up or down before the trend either reverses or moves sideways. After an exhaustion gap, price can suffer a violent reversal. So if you don't exit a trade quickly, you may find profit dwindling.

Identification Guidelines

Table 36.1 lists identification guidelines for gaps.

Area gaps. *Area, common,* or *pattern* gaps are all names for the same type of gap. The gap forms inside or just after a consolidation region. It is easy to spot because price seems to hook around and closes the gap in less than a week (many times in the next trading session or two). Figure 36.2 shows many examples of this hook feature: For example, you can see (if you have a magnifying glass) in late March that price gaps down and the next day the high closes the area gap. A quick hook such as that is characteristic of area gaps. Usually, few or no new highs (for uptrends) or lows (when price gaps lower) occur immediately after the gap.

Volume may be high on the day price gaps but usually settles down quickly. You can see this behavior in late January. Volume spikes on the gap day, then returns to normal the next day.

Breakaway gap. Breakaway gaps highlight the start of a new trend. Volume rises substantially above the prior day and price gaps upward and continues rising (or falling in the case of a descending price gap), forming new highs (or lows).

Table 36.1 Identification Guidelines

Characteristic	Discussion
Area, common, or pattern gap	Occurs in areas of congestion (trendless markets) and closes rapidly. Volume on the day of the gap may be high but returns to normal in a day or two. Few new highs (uptrends) or lows (in downtrends) occur after the gap. A distinctive curl as the gap closes is a key indication of this gap type.
Breakaway gap	Identifies the start of a new trend and usually occurs after breaking out from a consolidation region. Is accompanied by high volume on the day of the gap, which continues for several days. The trend continues long enough for several new highs (for uptrends) or new lows (downtrends) to occur after the gap.
Continuation, measuring, or runaway gap	Happens in the midst of a straight-line advance or decline. Price continues making new highs or lows without filling the gap. Volume is usually high, propelling price in the direction of the trend.
Ex-dividend gap	Is triggered by a dividend distribution. Price moves down by the amount of the dividend, and a gap appears if the day's trading range does not close it.
Exhaustion gap	Occurs at the end of a trend on high volume. The gap is not followed by many new highs or lows, and the gap itself may be unusually tall. After the gap, price enters a consolidation region or reverses. Commonly occurs after a continuation gap. The gap closes quickly, usually within a week.
Opening gap	Either partial or full. The gap appears on intraday charts when the opening price gaps away from the prior closing price. Usually closes by day's end (72% do). Full opening gaps have no overlap with the prior day's price bar (that is, comparing the prior day's close to the current opening price). Partial gaps open above or below the close, but are still inside the prior day's high–low price range.

Consider the breakaway gap in early April shown in Figure 36.2. You can see price gap away from a congestion region and price continues rising for several days, accompanied by rising volume.

The large breakaway gap in mid-April, accompanied by a high volume spike, is not an exhaustion gap because price continues rising.

Price moves sideways starting after the peak in April and continuing into June before a breakaway gap sends price lower. The gap, along with the one in April, leaves behind an island reversal chart pattern. Both gaps that set off the island reversal occur on high volume and are probably event driven (some news happened, but that's just a guess). Usually tall gaps are associated with exhaustion gaps, but price continues moving lower in the June case, so the gap is a breakaway gap.

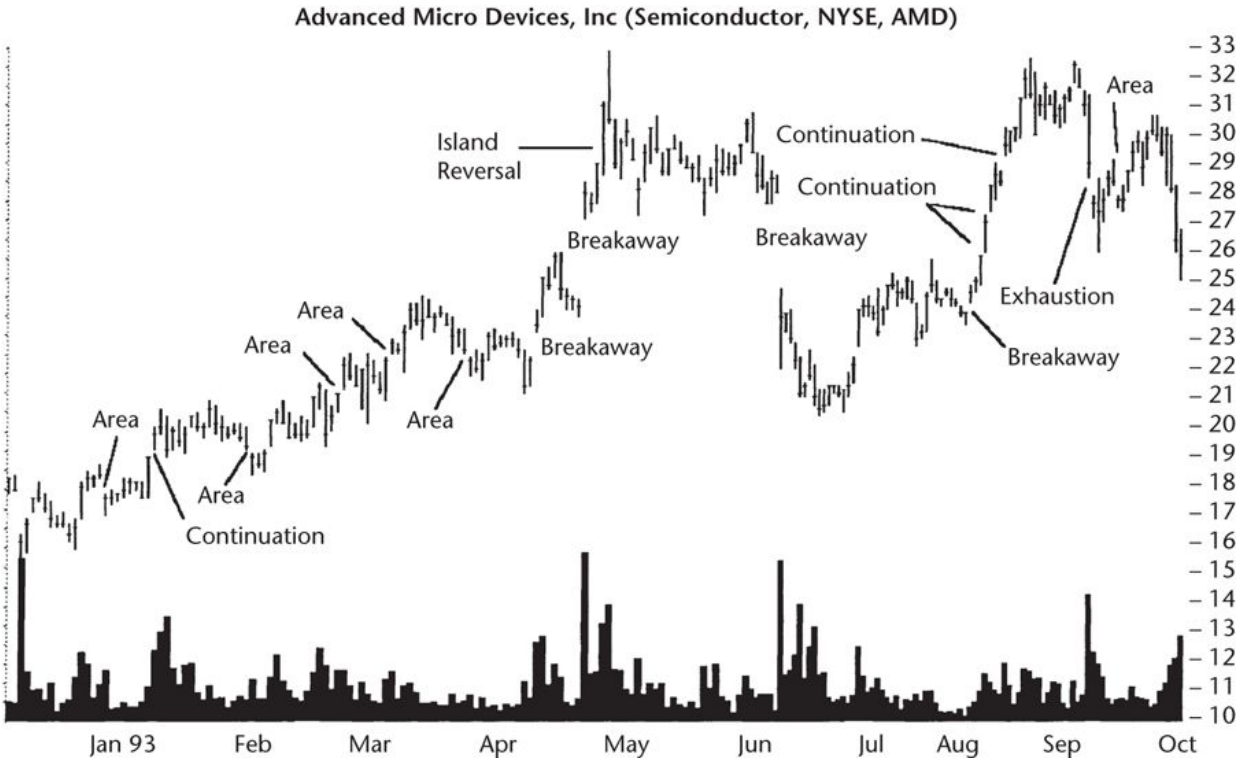


Figure 36.2 Various gap types with area gaps illustrating the hook feature. Volume pattern and position within the trend are the main ingredients to correctly identifying the different gap types.

Continuation gaps. Continuation gaps occur along a strong price trend. They do not happen often since it takes a sharp rise followed by

a gap and a continued rise in the stock (the reverse for downtrends, too).

In Figure 36.2, you can see several continuation gaps in August when price zooms from a low of 23.50 to 32.63 in about 2 weeks. The gaps appear in the quick, sharp price rise on high, but not unusually high, volume. The quick rise forms new highs and the gap remains open (compare these continuation gaps with how quickly area gaps close). Of course, in a downtrend, price gaps downward and forms new lows.

Ex-dividend gaps. An ex-dividend gap appears on the price chart when a dividend-paying stock distributes the dividend. Usually, however, the day's trading range will cover the gap.

Exhaustion gaps. Exhaustion gaps commonly follow continuation gaps, but there are lots of exceptions. Excessively tall gaps are most likely exhaustion gaps when they appear near the end of a trend. An exhaustion gap appears on the chart in September. The gap appears at the end of a downward move and closes quickly, which is typical for exhaustion gaps. Notice how a violent reversal occurs after the gap completes. Price rises from a low of about 26 to almost 31 in a few weeks.

Most exhaustion gaps occur on high volume; it is like the last gasp before price ends the trend. You can see in the figure that the exhaustion gap has high volume. Volume spikes upward even as price descends, then volume recedes but remains high for several days after the gap. The high volume highlights the struggle of investors who want to purchase the stock at a good price with those who are trying to get out of the situation at the best offer.

Opening gap. This gap type comes in two varieties, full and partial, which describes if the gap ventures outside of the prior day's high–low trading range (full) or not (partial). Because it's on the intraday scale, I don't cover it in this book. As I mentioned, my *Swing and Day Trading* book gives full treatment of this gap.

Statistics: Area Gaps

In the tables that follow, the presentation is different than in many other chapters of this book. I don't measure performance of gaps in terms of the ultimate high or low. Rather, I search for details that describe the behavior of the gaps.

The table headings show up and down gaps, not up and down breakouts. The difference is in the direction price gaps, up or down. An up gap, for example, occurs when today's low price is above yesterday's high price. A down gap happens when today's high is below yesterday's low.

Table 36.2 shows general statistics for area gaps.

Number found. I didn't do an exhaustive search for gaps because it was, well, exhausting. I used 287 stocks from July 1991 to November 2018 and found 4,347 gaps. They split into bull and bear markets, up and down gaps, and four gap types. For area gaps, I found 1,140 of the critters. I should have called the exterminator.

Average time to close the gap. On average, it takes about 4 days for price to cover the gap, regardless of market condition or gap direction. In bull markets, when price gaps upward, the closing time is 1 day longer than the other varieties.

Percentage closed. The table shows the closure rates. Nearly all of the area gaps close in the first week or two. You can scan down the other tables to see the closure rate compared to area gaps and verify that area gaps close a lot faster (in days, not weeks or months) than the other types.

Table 36.2 General Statistics: Area Gaps

Description	Bull Market, Up Gap	Bear Market, Up Gap	Bull Market, Down Gap	Bear Market, Down Gap
Number found	403	196	429	112
Average days to close the gap	5	4	4	4
Closed in 1 week	85%	92%	90%	88%
Closed in 2 weeks	99%	100%	100%	100%
Average gap height	$0.26	$0.47	$0.20	$0.48

Average gap size. Area gaps in bear markets are about twice as tall as those in bull markets. Why this is the case is a mystery to me. The smallest gaps occur in bull markets, with a downward direction (price gaps downward).

That makes intuitive sense if you think of the bull market as a current going in one direction and a down gap as gapping in the opposite direction (downward). It's like trying to ride a bicycle against the wind. However, if that's really the case, then why is the up gap in bull markets also showing a small gap (both are moving in the same direction)? I don't know.

Statistics: Breakaway Gaps

Table 36.3 shows general statistics for breakaway gaps.

Number found. I found 1,580 breakaway gaps. That high number of gaps is a small sample of how often these gaps occur. You'll see them bust out of a consolidation region, often on high volume which tends to remain high.

Average time to close the gap. The average time for the gap to close varies from 195 days (about 6.5 months) to 430 days (14 months). The 430 number is pulled up by about two dozen gaps that don't close for years.

Percentage closed. Breakaway gaps do not close quickly, as Table 36.3 shows. Few close in the first week. Those that do close in a week make a strong trend for about 3 days followed by a violent reversal. The trend is too tall to consider them area gaps.

After several months, there's a number of breakaway gaps still open.

Table 36.3 General Statistics: Breakaway Gaps

Description	Bull Market, Up Gap	Bear Market, Up Gap	Bull Market, Down Gap	Bear Market, Down Gap
Number found	781	138	530	131
Average days to close the gap	337	195	209	430
Closed in 1 week	1%	8%	1%	0%
Closed in 2 weeks	8%	17%	5%	12%
Closed in 3 weeks	19%	30%	13%	33%
Closed in 1 month	28%	38%	20%	46%
Closed in 2 months	53%	61%	46%	68%
Closed in 3 months	64%	75%	60%	76%
Closed in 6 months	84%	91%	84%	92%
Average gap height	$0.66	$0.73	$1.70	$1.12

Average gap size. The average gap size varied across market conditions and gap directions, with downward gaps being larger than upward ones.

Statistics: Continuation Gaps

Table 36.4 shows general statistics for continuation gaps.

Number of formations. I found 763 continuation gaps in the stocks I looked at. Continuation gaps occur during an existing trend, often on high volume.

Average time to close the gap. Compared to breakaway gaps, continuation gaps close quicker, as one might guess (because breakaway gaps appear near the trend start but continuation gaps appear in the middle). The longest takes almost a year to close.

Percentage closed. I show how fast (or slow) continuation gaps close over time. After about a month, half the gaps remain open. After 6 months, some still remain open.

Average gap size. Downward gaps in bear markets are the tallest. I know that bear markets see price drop about twice as fast as it rises in bull markets, so I'm wondering if gaps help that process.

Gap position. I measured where in the price trend the gap continuation gap appeared. The median gap location from the trend start to the end of the trend is about midway, regardless of market conditions (bull or bear) and gap direction (up or down). I was surprised by this, but pleased, too. I like to see consistent results across different conditions.

Table 36.4 General Statistics: Continuation Gaps

Description	Bull Market,Up Gap	Bear Market, Up Gap	Bull Market, Down Gap	Bear Market, Down Gap
Number found	284	99	222	158
Average days to close the gap	168	121	104	343
Closed in 1 week	8%	20%	15%	17%
Closed in 2 weeks	27%	40%	31%	33%
Closed in 3 weeks	39%	56%	46%	45%
Closed in 1 month	46%	59%	57%	57%
Closed in 2 months	66%	82%	72%	73%
Closed in 3 months	74%	87%	83%	80%
Closed in 6 months	89%	98%	95%	90%
Average gap height	$0.67	$0.67	$0.57	$1.04
Median gap location in trend	51%	49%	50%	50%

Table 36.5 General Statistics: Exhaustion Gaps

Description	Bull Market, Up Gap	Bear Market, Up Gap	Bull Market, Down Gap	Bear Market, Down Gap
Number found	284	149	283	148
Average days to close the gap	23	10	19	21
Closed in 1 week	60%	75%	66%	63%
Closed in 2 weeks	79%	89%	82%	85%
Closed in 3 weeks	86%	93%	88%	90%
Average gap height	$0.70	$0.66	$0.59	$1.07

Statistics: Exhaustion Gaps

Table 36.5 shows general statistics for exhaustion gaps. Exhaustion gaps occur near the end of the trend, often on high volume. They can be especially tall, so if you see an unusually tall gap, there's a good chance it'll be an exhaustion gap (no guarantee, though). Figure 36.2 shows two big gaps that set off the island reversal, but they are breakaway gaps, not exhaustion ones.

Remember that after an exhaustion gap completes, there can be a violent reversal. That's why our prisons are so full.

Number of formations. I found 864 exhaustion gaps in the stocks I looked at.

Average time to close the gap. Exhaustion gaps close quickly, usually between 1 and 2 weeks on average.

Percentage closed. The table shows how quickly exhaustion gaps close. In one week, about two-thirds of the exhaustion gaps close. In 3 weeks, many of them are closed with bear markets closing slightly faster than bull markets.

Average gap size. The average gap size varies with the largest appearing in bear markets with downward gaps.

Trading Tactics and Sample Trade

Table 36.6 lists trading tactics for gaps. To successfully trade gaps you have to be quick, making sure to use stops, and you have to be ready to close out a trade at a moment's notice. Still, they can be profitable. Consider what Gina did with the situation shown in **Figure 36.3**.

As a seasoned investor, Gina knew all about gaps and practiced trading them on a trading simulator until she was successful most of the time and comfortable taking a loss. The practice honed her skills and pulling the trigger seemed rote.

Table 36.6 Trading Tactics

Trading Tactic	Explanation
Area gaps	These gaps are too short-lived to be traded profitably, consistently.
Breakaway gaps	If high volume is present at the start of a trend, then trade with the trend. Verify gap type by reviewing the identification guidelines before trading.
Continuation gaps	Continuation gaps usually mark the halfway point of a short-term price trend so you can gauge the eventual price move. Measure from the trend start (the nearest minor high or low) to the gap center and project the difference from the gap center to the predicted high or low.
Exhaustion gaps	If an abnormally wide gap occurs or a gap occurs at the end of a trend, then close out your position when the trend reverses. After an exhaustion gap completes, consider trading the new trend (shorting the stock if the prior trend was up). Violent reversals often follow exhaustion gaps. Close out the trade the day after new highs (for uptrends) or new lows (downtrends) fail to occur.
Stop loss	The lower rim (for uptrends) or the higher rim (for downtrends) of a gap is a good place to put a stop (15 cents or so away from the rim). Gaps provide near-term support or resistance (but it's weak), so this strategy works well with those gaps that do not close quickly.

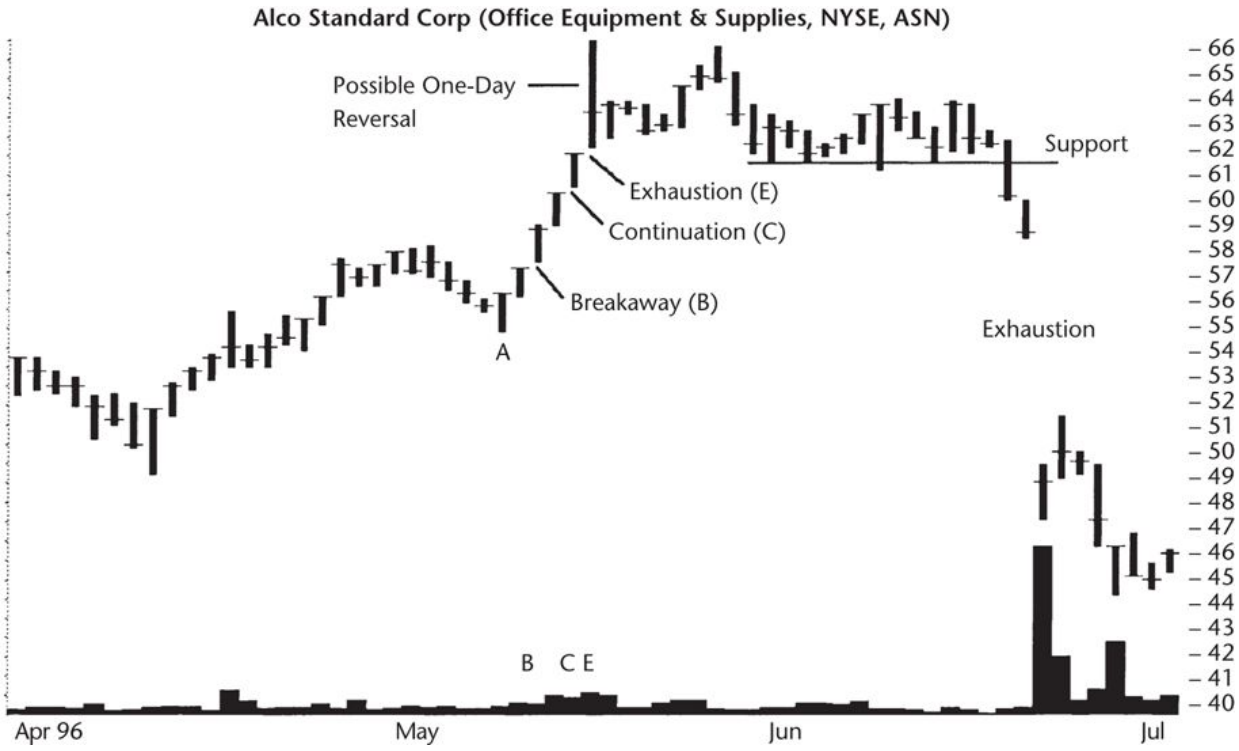


Figure 36.3 Gina bought the stock on the breakaway gap and sold it a few days later for a $7,500 profit. Then she shorted the stock as the exhaustion gap turned into a dead-cat bounce.

With a focus on limiting her losses, she was growing confident that her trading style was one that would allow her to succeed in the markets, so she took the leap and decided to trade her system for real.

“I followed the stock for a long time and was both familiar and comfortable with the fundamentals of the company. When the breakaway gap occurred on 10 May, I was ready. I checked the identification guidelines.”

Volume was above average (although it may not be clear from the chart), and a new upward price trend seemed to be forming. “I called my broker and bought 1,000 shares at 58. Then I placed a stop-loss order at 57.00, or 13 cents below the lower gap rim just to be safe.”

If this turned out to be an area gap, she would probably be stopped out for a small loss. During her paper trading days, she discovered that most gaps provide near-term support or resistance, so she was confident that her stop would hold. [Notice that she placed her stop at a round number: 57.00. I'd probably put it at an odd number, like

56.93, so support at 57 would help reverse a decline before hitting her stop].

“Two days later the stock gapped again. It could either be a continuation gap or an exhaustion gap. I didn't know which.” Volume was heavy, about twice the 25-day moving average, so that offered no clue. “The following day, price gapped again, so I knew the prior pattern was a continuation gap.”

Gina checked the price chart and using the center of the continuation gap as a midpoint, she measured from the trend low (point A in the figure) to the center of the gap. The difference was 5.50 (that is, 60.25 – 54.75). Adding the difference to the middle of the continuation gap predicted that price would top out at 65.75, so she placed a stop at 65.50, and moments later, the stock was sold. That day, the stock climbed to a high of 66, slightly above the predicted price, and closed the day at 63.25.

Not including commission charges, she made $7,500 in just 4 days. But she was not done. The tall daily price range on high volume when she sold reminded her of a one-day reversal, but she was unsure. She decided to keep her options open and looked for an opportunity to sell short. She followed the stock daily, and when it closed below the support level at 61, she decided to sell the stock short and received a fill at 59. [Because she was a trading novice, I don't recommend going short.]

“The next day I was surprised and delighted to discover that a large exhaustion gap had formed, dropping the stock down to 49, for a $10,000 gain overnight.” Knowing that the gap was in reality a dead-cat bounce, she changed tactics and did not immediately close out her position.

Instead, she watched the stock bounce upward for a few days and then continue lower (as the formation predicts). Instead of getting greedy, she decided to close out her position and received a fill at 45, for an easy $14,000 profit in less than 2 weeks.

If you think Gina was lucky, netting over $21,000 in 2 weeks, you are right. But her ability to correctly size up an investment opportunity and act on it quickly while taking steps to minimize losses goes a long way to explaining her luck. Some call it skill.

Gina is a serious investor who leaves nothing to chance. She did not just jump in and start trading gaps after reading about it in some book. Instead she researched the pattern, followed the stock closely, and developed a successful trading style that incorporates gaps. It worked for her, but it might not work for you.

Experience

Figure 36.4 shows the sale of a stock I owned a long time ago, based on the appearance of two gaps.

In early 2013, Georgia Gulf Corporation (GGC) merged with a portion of PPG Industries and then was acquired by Westlake Chemical Corporation. It did a reverse split over a decade after I sold, and that's why the right scale shows such a high price.

Let's talk about how I used gaps in this trade. I owned the stock and watched as price made a V-shaped top. At A, circled, the stock made a chart pattern called a narrow range 4. It says that the last price bar of the four is the shortest. Price gapped down out of the pattern in a breakaway gap. A day later, another gap appeared, an exhaustion gap.

Here are my notes from the trade. “20 February 1998: Two days ago, there was a narrow range 4 coupled with an inside day. Had I known about these, I might have sold it sooner, but I held on to today before I sold. This is now after a breakaway gap (yesterday) and an exhaustion gap (today). I suspect that the decline is over. From here, I believe it will double top then decline. Volume is just too high to be sustainable.”

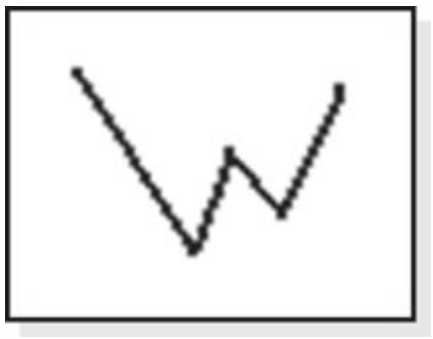
Figure 36.4 Bulkowski sold this stock after two gaps appeared.

I received a fill at 821.88, which is just below the closing price on the day shown on the chart.

The attempt at a second peak (a double top) never happened, but my prediction that the stock would continue down was correct. The stock hit bottom at 250 in late March 1999 for a drop of 70% below my sale price.

I don't use gaps often in my trading, but this is an example of how I have used them in the past. Gaps have helped me exit stocks near the peak. The gap is an exit signal, but knowledge of the stock's fundamentals and technicals also helps time the exit and gives me confidence that the sell decision is correct.

37
Gartley, Bearish



RESULTS SNAPSHOT

Appearance: Looks like a big W with the turns located by Fibonacci ratios.

Downward Moves

	Bull Market	**Bear Market**
Performance rank	3 out of 5	1 (best) out of 5
Breakeven failure rate	21.5%	7.3%
Average drop	–14.1%	–23.3%
Volume trend	Downward	Downward
Point D reversal rate	87%	89%
See also	Big W, double bottoms (all types), bearish bat, bearish crab, bearish butterfly	

The bearish Gartley is another pattern whose turns are governed by Fibonacci numbers. The actual numbers used for identification are open to debate. Your software may pick numbers different from the ones I chose.

I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a

reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book.

The Results Snapshot shows that the performance rank of the Gartley in bear markets is the best out of the five types of bearish Fibonacci-based patterns studied. The performance rank measures the average decline from the high at point D in the pattern (the end of the pattern) to the ultimate low but only for those patterns reaching and turning down at D.

Failure rates in bull markets are substantially higher than they are in bear markets. That makes sense when you consider the bullish market trend is fighting against the stock going down compared to giving the downtrend a swift kick in the pants in a bear market.

If price makes it up to the calculated point D, there's an 87% to 89% chance price will turn lower. That's near the top-of-the-food-chain, so it's good. I'll discuss more numbers in the Statistics section. Until then, let's take a tour of the pattern.

Tour

Figure 37.1 shows a bearish Gartley at turns XABCD. This Gartley appears in a longer-term downtrend that began in May 2018 from a high of just over $80. The pattern looks like a W from X to D, but it looks nicer on a more compact scale (smaller-looking up-and-down wobbles). The pattern starts at peak X and ends at D, forming an Eve & Adam double bottom at AC that fails to see price rise much above peak B. The double bottom is not part of the Gartley, just an observation about this example.

When the stock reaches the predicted price of 58.83 at D (which peaks at 59.32), the stock drops. It heads lower, dropping 25% to the ultimate low at E. The ultimate low is the lowest low after which price climbs more than 20% or closes above the top of the chart pattern (X in this case).

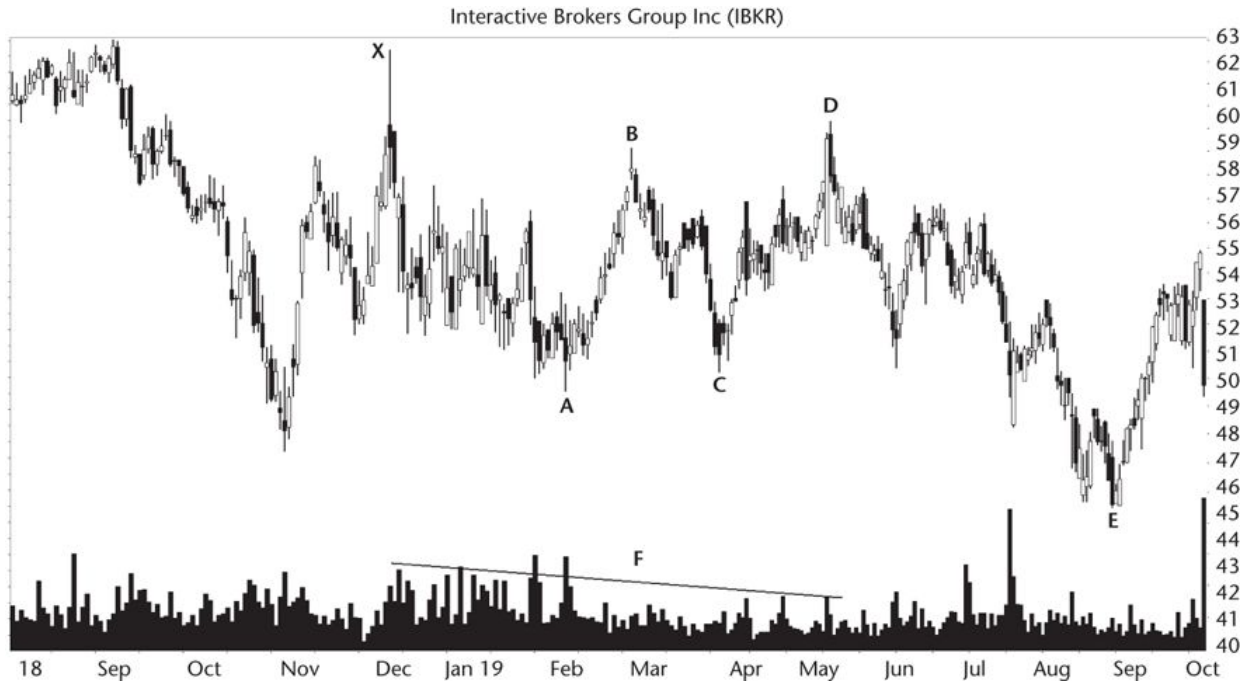


Figure 37.1 This bearish Gartley sees price break out downward, and the drop from D was worth trading.

If you do the math for this pattern, we will know the price D is supposed to be. When it appears, let's say we short two days later, just to be safe that the stock has put in a top at D, filled at 55.

We decide to sell after E put in a double bottom, at about 48. The difference, $7 a share or 13%, is our profit. That's a reasonable expectation for this trade, and it shows the power of a Gartley. You may have been able to make more or less, depending on your trading skills and your courage.

One last thing: Volume trends downward as shown by line F. I know you've been waiting for me to say that, so *tag*, you're It.

Identification Guidelines

Table 37.1 shows the identification guidelines for the bearish Gartley, and Figure 37.2 provides an example for your viewing pleasure. Don't forget the popcorn.

This bearish Gartley (which appears as turns XABCD) shows a frequent anomaly found in the pattern. Notice how price dips after point D before moving higher to G. A visual examination of 100 bearish Gartleys shows this behavior happens 27% of the time. Sometimes the breakout is upward, meaning the rise to G sees price close above X. That's not the case in this example, though. Here, price breaks out downward at E when price closes a whisker below the low at A.

If you had shorted the stock after D when price started moving lower and placed a tight stop a penny above the high at D, you would have been stopped out of the trade for a loss. Then the stock would have rubbed salt into the loss when price dropped in a straight-line run down to E. At E, the stock bounced off support and the bearish decline ended ... for a time.

Table 37.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big W with the turns located by Fibonacci ratios.
BA/XA retrace	The ratio of BA/XA is .618.
BC/BA retrace	The ratio of BC/BA is one of .382, .5, .618, .707, .786, or .886.
DC/BC extension	The extension of leg DC to BC is one of the Fibonacci numbers: 1.13, 1.27, 1.41, or 1.618.
DA/XA retrace	The ratio of DA to XA is .786.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for most chart patterns.

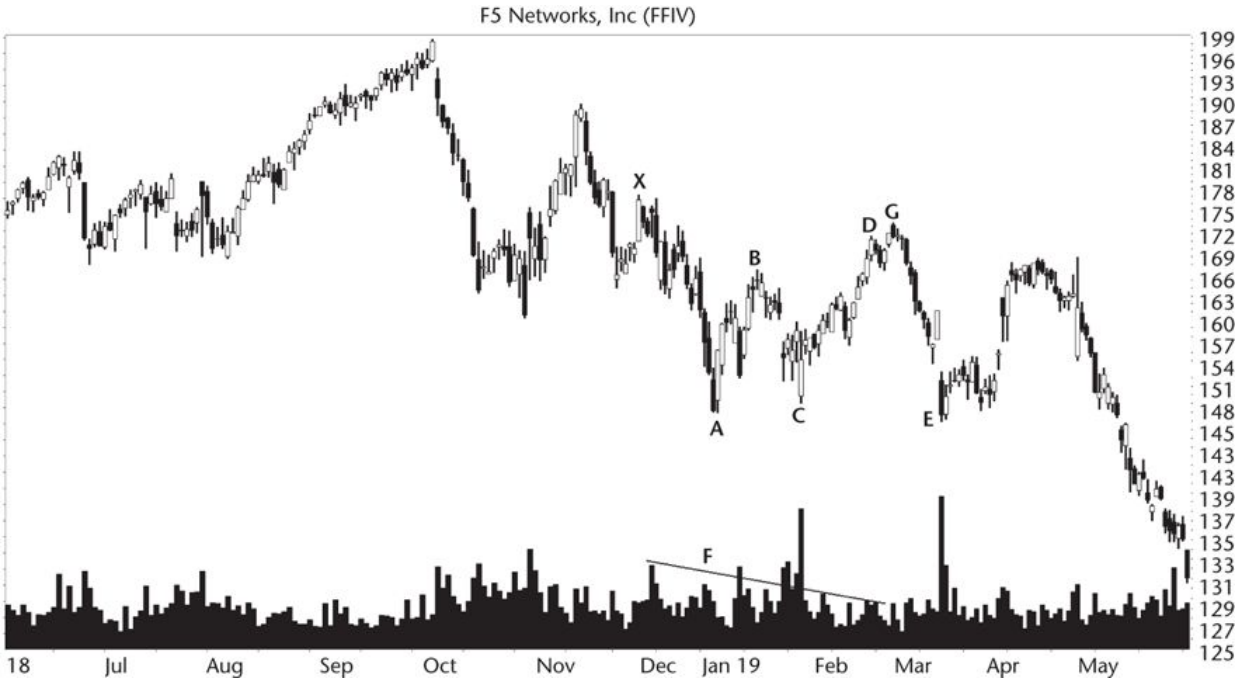


Figure 37.2 The bearish Gartley is at XABCD. Notice the minor dip after D and climb to G.

The calculated D turn is at 168.45 for this pattern, so the stock overshot that price. Thus, if you went through the math and placed an order to short before checking if the stock actually turned there, you were making a mistake. I can't image anyone doing that, but you never know.

Volume in this Gartley is typical for the pattern (a downward trend).

Appearance. The pattern is named after its founder, H. M. Gartley. It looks like a big W with unequal bottoms, a pattern I call an ugly double bottom. I don't discuss ugly patterns in this book, but my website (ThePatternSite.com) has some details on a few patterns in case you're interested (look for *Ugly patterns* on the home page).

The bearish Gartley is a five-turn pattern with several of the turns obeying Fibonacci numbers; at least modern versions of the pattern apply numbers to the turns. Depending on which source you check, the numbers may vary from source to source as I mentioned. Table 37.1 shows the ones I used.

Your pattern recognition software may use a different method and different Fibonacci numbers to qualify the bearish Gartley. Here's how I identify the various turns in the pattern.

BA/XA retrace. I select the first two turns, X and A, as a significant minor high and low, respectively. Then I look for turn B, which should create a .618 ratio of leg BA to XA. For Figure 37.2, I use the high at X (177.27), low at point A (149.87), and the high–low range of the last point of the three, B, at 167.32 to 164.82. The thinking here is that the high–low range of the price bar at B should encompass the .618 number. Looking for too narrow a window will reduce the pattern count (but may improve performance).

Plugging the values into the ratio using the high at B, we get (167.32 – 149.87)/(177.27 – 149.87) or .64. Using the low at B, we get (164.82 – 149.87)/(177.27 – 149.87) or .55. Thus, the range of .55 to .64 encompasses the target .618 Fibonacci number. Turn B qualifies as valid.

BC/BA retrace. I use the same method to find turn C, which has a high–low price of 159.55 to 151. I use the high at B, the low at A, and the high–low range at C (the last turn in the triplet). Plugging the numbers into the BC/BA ratio gives a range of .445 to .935. That range should include at least one of the numbers listed in Table 37.1 for this line item, and it does (all except .382). Turn C is a good egg.

DC/BC extension. Extensions use the same method as retraces. This time, we're trying to find point D, so that's the one I use the high–low price range on. D has a range of 171.71 to 168.50. Plugging them into the equation using the high at B, low at C, and the high–low range at D gives 1.07 to 1.27. That range includes two of the Fibonacci numbers listed in the table. Turn D is a valid part of the Gartley.

DA/XA retrace. Finally, with the DA/XA retrace, I use a different method. I use the high at X, low at A, and high at D, but turn D must be within 3% of the target .786 number. Using the numbers in the formula gives .80, which is within 3% of .786.

Volume. Volume trends downward between 65% and 71% of the time, according to research I did on the pattern. See Table 37.2 for more information.

Duration. I limited bearish Gartleys to no more than 6 months long. This is an arbitrary limit.

Focus on Failures

Figure 37.3 shows what I consider a failure of a bearish Gartley. The Gartley is conveniently labeled XABCD in the figure. The idea behind a bearish Gartley is to see price drop after D. When it doesn't, then that's a failure.

For example, in the figure, price drops from peak D, but not far (to E, just 4% below D), before zipping up to F (at the breakaway gap) and staging an upward breakout. I show that breakout where price closes above the horizontal black line at F. Volume slopes downward from pattern start to end as G shows.

I already mentioned the dip that appears after D 27% of the time, and this is another example of that behavior, only this stock continues higher (versus Figure 37.2, which turns down at G). So shorting at D is a risk when trying to trade this pattern.

In Figure 37.3, notice the strong upward push from the lowest low on the chart (in late December) to the start of the pattern (X). The Gartley acts as a measured move up (or ABC correction if you're an Elliott waver), with the drop from X to A being the corrective phase, followed by a resumption of the uptrend from A to the high on the chart (I know, the last leg doesn't rise far enough. The stock dips to 247 in December and peaks in February 2020 at nearly 307).

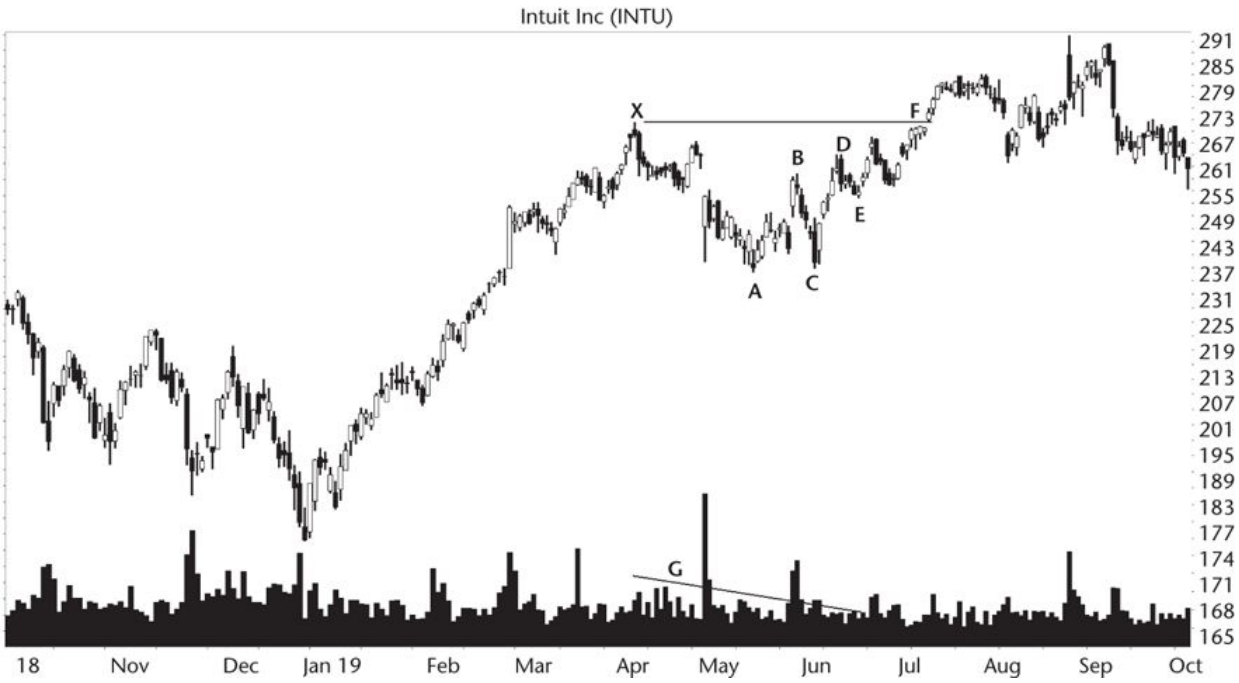


Figure 37.3 The move from D to E is just 4%, making it difficult to short this Gartley profitably.

Maybe the next time you see such a strong push higher (the straight-line run from the December low to X), be cautious about taking a bearish position. There's an old saying that you should avoid shorting stocks making new highs; short those making new lows. The failure of this pattern to make a meaningful drop after turn D is an example. This bearish Gartley is bullish.

Statistics

Table 37.2 shows general statistics for the bearish Gartley. Because the numbers highlight perfect trades, your trading results will vary. I focus on the move after turn D to gauge performance to the ultimate low. The ultimate low is the lowest low before price either climbs by 20% or closes above the top of the Gartley.

Number found. I unearthed 2,975 bearish Gartleys in 1,098 stocks with them appearing from July 1991 to September 2019. Not all stocks covered the entire period, and some no longer trade.

Breakeven failure rate. This is a count of how often the stock fails to drop more than 5% below D. Notice that when the downward direction agrees with the bear market trend, the failure rate is tiny (compared to other chart pattern types).

Table 37.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,417	558
Breakeven failure rate	21.5%	7.3%
Average decline after D	–14.1%	–23.3%
Volume trend	71% Downward	65% Downward
Performance Up/Down volume	–13% U, –14% D	–23% U, –23% D

In bull markets, where the turn down at D is met with a rising general market, the headwind keeps price from falling far. The bull market failure rate is huge compared to the bear market, about three times higher. That's a gale force headwind ...

Average decline after D. For swing traders, this is important. You'll want to know how far down the average pattern sends price. Again, the bear market drop outperforms the bull market drop by a wide margin, almost two to one. I'll use a magnifying glass in the next table and take a closer look at these numbers.

Volume trend, performance. Volume trends downward, on average, at least 65% of the time. I checked the performance of Gartleys with up and down trending volume and did not see a significant performance difference.

Trading Tactics

As I mentioned, the thinking behind the bearish Gartley is not to burn your fingers out when using a calculator to find all of the turns, but the short after price peaks at D. How well does that work? Let's check some numbers, shown in **Table 37.3**.

Table 37.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	87%	89%
How many drop to point A?	34%	41%
How many drop to point B?	99%	98%
How many drop to point C?	51%	57%

How often does price turn at D? I found that price nearly always (87% to 89% of the time) rises up to reach the calculated turn D. The two market numbers are close, too, which is reassuring. So you can know ahead of time at what price D will appear. Then you can wait with Snoopy for it to show, like what's his name in the pumpkin patch in the Charley Brown series. After price turns, then you short. But how far down will the stock drop?

How many drop to...? For those patterns that do see price reach and turn at D, how far down does price drop? I used the pattern's turns to help gauge this.

For example, turn B is closest to turn D, so you would expect a high rate of price reaching that turn. Indeed, nearly all of the patterns will drop to B.

At the bottom of the pattern is point A. In bull markets, less than half (34%) will see price drop that far. Bear markets do better with price reaching the bottom of the pattern 41% of the time, but that's still less than half the patterns. Clearly you'll do better trading this pattern in bear markets than in bull ones.

Now that you have the probabilities of price reaching one of the turns in the Gartley, you can pick your target.

Let's read how George traded a Gartley.

Sample Trade

Figure 37.4 shows how George used a bearish Gartley to trade a stock. His software found the pattern for him at XABCD. He measured the rise from A to B (43.56 – 34.70) or 8.86. He added this to the low at C to get a target of 8.86 + 35.73 or 44.59. Point D's high was 45.38, which is close to the predicted target.

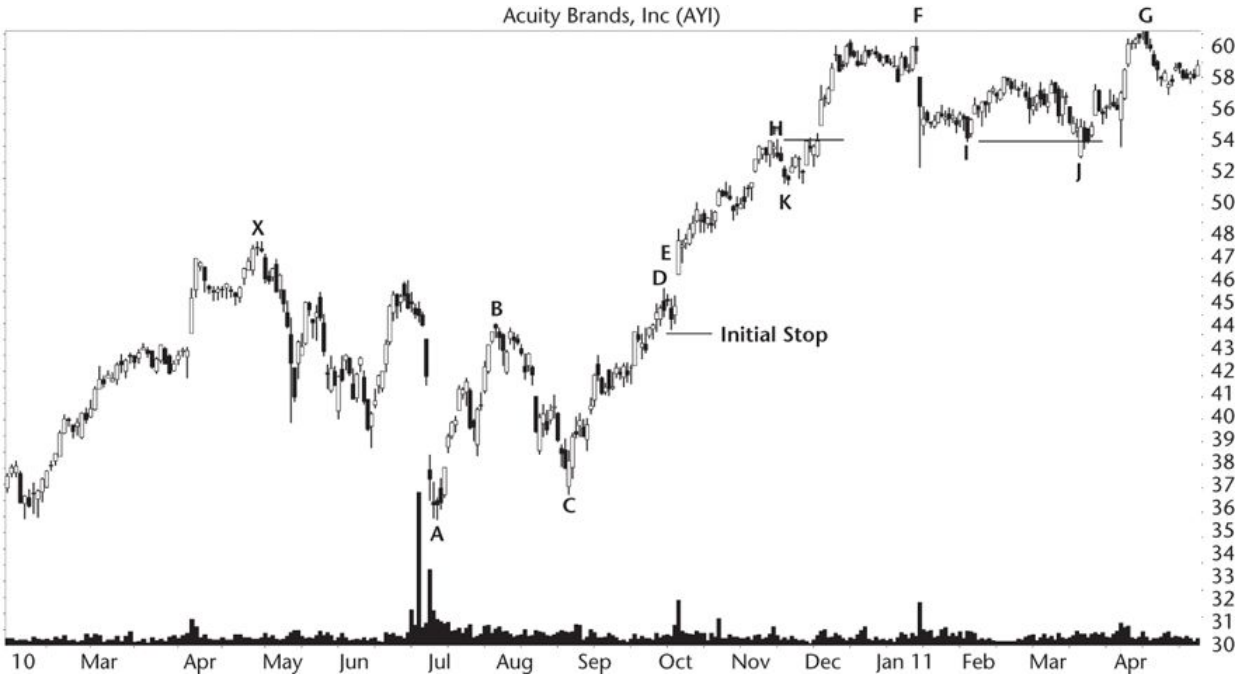


Figure 37.4 George traded this bearish Gartley like a normal chart pattern.

George calculated how long it would take price to rise to D. Using points A (2 July 2010), B (27 July 2010), and C (24 August 2010) as references, he added the 25-day span of AB to C to get 18 September 2010. Point D came close, peaking on September 30. This method was a way to calculate point D, given the ABC turns. The idea depends on the AB=CD pattern working (where leg CD equals AB both in time and price).

However, George doesn't like to short stocks. “Too dangerous. Remember what happened to Joe Campbell?”

Joe had $37,000 in his brokerage and bet a $2 biotech stock would fall further. The next day, the stock surged to $16, wiping out his

account and with the brokerage handing him a bill for an additional $106,000.

George decided to trade this Gartley like a normal chart pattern. He measured the height of the Gartley, from X (47.91) to A (34.70) or 13.21. That gave him a target of 61.12 (when he added the height to the price of the top of the Gartley, X).

When price gapped higher (breakaway gap) at E and broke out upward (closed above the price of X), he bought the stock long and received a fill at 47.59 (the opening price the next day). He placed a stop at 43.21 or 9% below his purchase price. That's a few pennies below the minor low just after D (2 days before the gap). He placed an order to sell if the stock reached the 61.12 target.

Price continued moving higher and higher.

At H, price formed a minor high. When it resumed its upward trend, gapping higher again (a breakaway gap) above the peak at H, he raised his stop to K (below the minor low).

At F, the stock peaked at 60.73, close to his 61.12 target. But it closed down substantially, almost hitting his stop-loss order.

He remained in his trade but became nervous. “I should have sold near the peak.” He pointed to his screen, at F. Isn't hindsight wonderful?

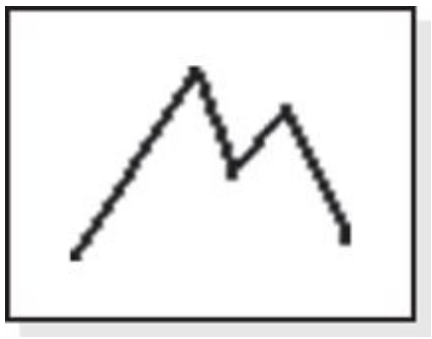
At I, the stock made a minor low. When it gapped higher (area gap) two days later, he raised his stop to 53.72, just below I.

At J, the stock dropped to his stop and took him out of the trade. If he held on for a few more weeks, the stock would have hit his 61.12 target at G and taken him out for a larger profit.

He bought at 47.59, sold at 53.72, and made 6.13 a share (13%). Had he held on until price reached his target, he would have made 13.53 a share or 28%.

The stock peaked at G, the ultimate high, at 61.45. After that, it dropped all the way down to 38 and change.

38
Gartley, Bullish



RESULTS SNAPSHOT

Appearance: Looks like a big M with the turns located by Fibonacci ratios.

Upward Moves

	Bull Market	**Bear Market**
Performance rank	5 (worst) out of 5	4 out of 5
Breakeven failure rate	13.5%	5.9%
Average rise	36.3%	29.2%
Volume trend	Downward	Downward
Point D reversal rate	90%	86%
See also	Big M, double tops (all types), bullish bat, bullish crab, bullish butterfly	

The bullish Gartley is another variation of Fibonacci patterns. This one looks like a big M with the right top slightly lower than the left. If I saw a twin peak pattern with a lower second peak, it would suggest the bulls were struggling to attain the height of the left peak and lost. And that would mean a larger decline.

I measured performance of Fibonacci-based patterns differently than I do other chart pattern types. That's because we're looking for a reversal at the end of the pattern and not an up or down breakout. Therefore, the layout of this chapter is different from most other chapters in this book. Only compare these results with other Fibonacci patterns.

Of the five bullish Fibonacci-based patterns I looked at, the bullish Gartley in bull markets is the worst performer. The breakeven failure rate in both bull and bear markets for this pattern ranks last (worst).

The reversal rate is very good, though, at 86% to 90% of the time. That means if you expect price to turn at the end of the pattern, there's a very good chance it will.

To get a complete picture, let's see what a bullish Gartley looks like and discuss some numbers.

Tour

Figure 38.1 shows an example of a bullish Gartley that works like it's supposed to. The pattern begins at X, which some describe as a major turn. My collection of Gartleys accepted any wide minor low as the first turn. Following X is a peak, a minor high, shown as point A. Both X and A are consecutive but not necessarily adjacent turns. However, as the chart shows, there can be intervening peaks or valleys between the two. Point B is located at a Fibonacci retrace of the XA rise (I'll explain what that means in the next section).

Additional turns follow (C and D), with each turn determined by a Fibonacci number. Let me say that the actual Fibonacci numbers used is open to interpretation. I've seen numbers different from the ones I chose. Your software may use a different algorithm to find Gartleys, so keep that in mind. They may perform better ... or worse.

After price bottoms at D, it's supposed to move higher, which it does in this case by laying down a straight-line run to E. Notice how peak E appears at overhead resistance set up by peak A. In this example, the stock retraces some, but eventually stages an upward breakout when price closes above the top of the pattern at F.

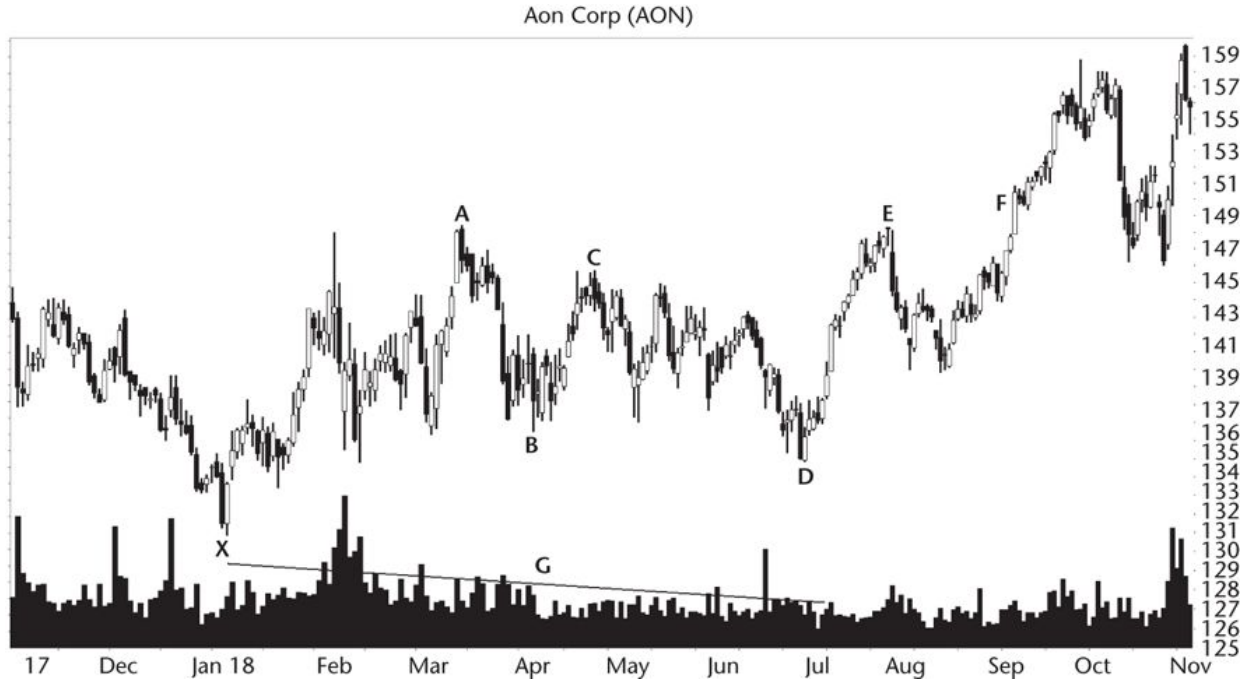


Figure 38.1 This bullish Gartley appears as turns XABCD.

So there you have it. The Gartley is at XABCD. Price climbs after D if the pattern is on its best behavior. Volume (G) trends lower most of the time like that shown.

How do we actually find Gartleys? Here's a hint: Don't look in the produce section.

Identification Guidelines

Table 38.1 shows identification guidelines similar to all Fibonacci patterns, and **Figure 38.2** shows another example of a bullish Gartley.

How do I find Gartleys? Let me count the ways. Actually, I programmed my computer to do the counting for me. If you want a copy of my pattern-finding software, visit my website at www.ThePatternSite.com. You can download and use a copy for free without any registration process or annoying ads. It'll find a garden full of butterflies, bats, crabs, including those pesky neighbors, the Gartleys.

Figure 38.2 shows a Gartley at XABCD. Price rises to F, hits overhead resistance, and fades, falling to G. Neither F nor G are outside the XA height, so a breakout hasn't happened at those turns. However, price rebounds to H, where an upward breakout happens, and price works its way higher after that (for a time, anyway).

Volume, in this example, trends upward, which is unusual for a bullish Gartley despite what you may have heard on the cocktail circuit.

Appearance. The pattern looks like a big M or double top with the right peak (C) lower than the left (A), sometimes by a substantial amount. You might think of it as an ugly double top (see my website for details).

AB/AX retrace. Turn B is located by calculating the retrace of the move up from X. To do this, I use the low price at X (31.49), the high price at point A (37.06), and the high–low price range at the target, B (33.83 to 33.20). Plugging the numbers into the formula using the high price at B, we get (37.06 – 33.83)/(37.06 – 31.49) or .58. Using the low price at B, we get (37.06 – 33.20)/(37.06 – 31.49) or .69. The range of .58 to .69 encompasses the target .618, so point B qualifies as the first Fibonacci turn in the Gartley.

Table 38.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a big M with the turns located by Fibonacci ratios.
AB/AX retrace	The ratio of AB/AX is .618.
CB/AB retrace	The ratio of CB/AB is one of .382, .5, .618, .707, .786, or .886.
CD/CB extension	The extension of leg CD to CB is one of the Fibonacci numbers: 1.13, 1.27, 1.41, or 1.618.
AD/AX retrace	The ratio of AD to AX is .786.
Volume	Volume is downward the majority of the time, but this is an observation, not a requirement.
Duration	I limited patterns to 6 months, but this is an arbitrary limit I use for many chart patterns.

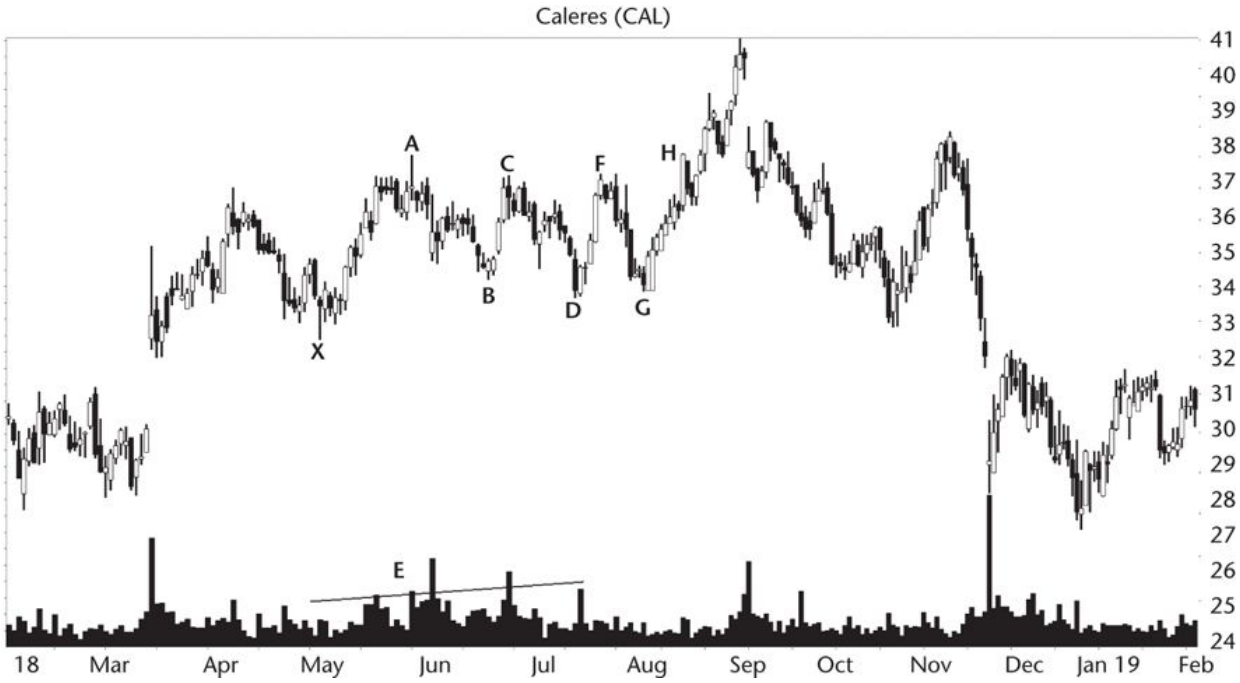


Figure 38.2 This bullish Gartley struggles to find a trend direction.

CB/AB retrace. Find turn C in the same manner. I use the high price at A, the low at B, and the high–low range of target C (36.38 to 35.02). Plugging the numbers into the ratio gives a range of .47 to .82. That range includes four Fibonacci numbers listed in Table 38.1 (any

one of them will do just fine, thank you very much), so point C qualifies as a valid turn, also.

CD/CB extension. Calculate an extension in the same way as a retrace. In this case, I use the low at B, high at C, and the high–low range at D (34.10 to 32.66) to get a range of .72 to 1.17. The 1.13 Fibonacci number squeaks into the range, so point D qualifies. We've one more ratio to calculate before we pronounce this a valid Gartley.

AD/AX retrace. For the last ratio, leg AD as a retrace of AX, I use the low at X, high at A, and low at D. Notice I don't use the high–low range at D. Rather, turn D must fall within a 3% window. Why? I wanted the last turn to be almost dead-on. In this example, point D comes in at .79, which squeezes through the 3% (of .786) window easily.

Passing that last ratio test means this pattern is a valid Gartley. However, one source I checked said that the height of leg CD should be a Fibonacci number of AB, so that it acts like an AB=CD pattern. You can add that test to see if performance improves.

Volume. We'll see in Table 38.2 that volume trends downward 62% of the time. Figure 38.2 shows an exception when volume (E) trends upward. To determine the volume trend, I checked the slope of a line found using linear regression. Often, you can just look at volume and see how it's trending.

Table 38.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,918	394
Breakeven failure rate	13.5%	5.9%
Average rise after D	36.3%	29.2%
Volume trend	62% Downward	62% Downward
Performance Up/Down volume	37% U, 36% D	25% U, 32% D

Figure 38.3 Price fails to rise much after D, and the Gartley breaks out downward.

Don't let the volume trend prevent you from trading a Gartley (or most other chart pattern types). You'll discover than the volume is a poor indicator of future performance.

Duration. The pattern has no maximum duration, but I set a limit of about 6 months for the patterns I catalogued.

Focus on Failures

Figure 38.3 shows a classic example of a bullish Gartley failure. The Gartley is at XABCD, with volume trending downward, G.

After turn D, the stock is supposed to rise. It does, but only to E in this case. If you bought long at the open on that day with a stop a penny or two below D, you'd have been stopped out when price stumbled on the way to F.

Looking at this pattern from X to F, notice that F bottoms near the price of X. I call X the launch price, and you sometimes see a reversal pattern that sends the stock back down like the one shown here. The stock will bottom near the price of X, often slightly higher than X. It doesn't happen that often, but such behavior (not just for Gartleys, but for all chart pattern types) can help you determine how far price might drop. It also might give you a buying opportunity when the stock turns upward at F.

Notice the inverted-roof-type pattern from May to October (and even a diamond bottom hiding in the middle of it, as shown). When I see a breakdown from this type of horizontal top and a bullish pattern emerges afterward, just as the Gartley does here, I know it's a disaster waiting to spring on the bulls. The pattern invariably fails and down price goes. Learn from this example and don't go long after the breakdown from a horizontal topping pattern.

Statistics

Table 38.2 shows general statistics for the bullish Gartley.

Number found. Gartleys were plentiful, especially in bull markets. The bear markets, two of them, were shorter than the bull markets, so you'd expect to see fewer patterns. However, and this was a quick calculation, more Gartleys appear in bear markets than in bull markets when adjusted for the time involved.

Breakeven failure rate. I counted the number of times a bullish Gartley saw price rise less than or equal to 5% on the way to the ultimate high.

It's odd that bear markets have lower failure rates than bull markets. Bull markets see price climb, helped along by the general market. Bear markets see price rise in a falling market. I would expect that when price struggles against a headwind (such as in bear markets), it wouldn't rise as far (meaning more failures), but that's not what happens.

Average rise after D. I measured the average rise for Gartleys from the low at D to the ultimate high. Patterns in bull markets performed better than did those in bear markets. That makes sense.

Volume trend, performance. I used linear regression to determine the volume trend from the start of the pattern to the end. Volume trends downward most often. I checked if performance was better when volume sloped upward or downward, and there's not much of a difference in bull markets. Bear markets give the performance edge to those patterns having a downward volume trend.

Trading Tactics

The idea behind the bullish Gartley is that once the pattern completes at D, the stock will turn upward. Because you can do the math and calculate where D is going to be, you can anticipate the turn. We'll see in a moment that 86% to 90% of Gartleys turn upward at D. So be patient and see if D forms where you expect.

When it's clear that the stock has found a bottom at D or is making its move higher, then buy the stock. Ride it upward. Table 38.3 provides guidance on how far price might climb, based on the Gartley turns.

Table 38.3 shows numbers important to swing traders.

How often does price turn at D? If price makes it down to D, does it turn there? Yes, and almost all of the time (86% or higher). Thus, you can depend on a Gartley seeing a reversal at D. Of course, even for a pattern with a high reversal rate, that says nothing about how far price will trend upward after D.

How many rise to...? For those turning upward at D, I mapped how often the stock climbed to the price of one of the turns. For example, point B is closest to turn D, and we see that nearly all of the time price will climb up to the price of B.

The top of the pattern is at turn A. The stock only reaches the price of A less than half the time (bull markets) and less than a third of the time in bear markets.

Hopefully, you can use these statistics to help decide if a Gartley is worth trading. Your situation may be different, and other indicators may help you select patterns that will outperform.

Sample Trade

My brother called last night, and we chatted about stocks. His holding in Netflix jumped upward on good quarterly numbers. “How should I trade it?” he asked.

“In about a week to ten days, it'll peak. Sell it then.” That's what I told him. It reminds me of a trade Jacob made. See **Figure 38.4**.

Jacob's computer flagged the Gartley (XABCD) and showed him where turn D was expected to appear. Looking to the left of point D, he saw points B and E were near the same price. “That's support,” he told me. Except for the plunge at X, the rest of the pattern (EBD) seemed to be resting on a flat table.

Table 38.3 Price Move after Pattern End

Description	Bull Market	Bear Market
How often does price turn at D?	90%	86%
How many rise to point A?	45%	31%
How many rise to point B?	98%	98%
How many rise to point C?	59%	49%

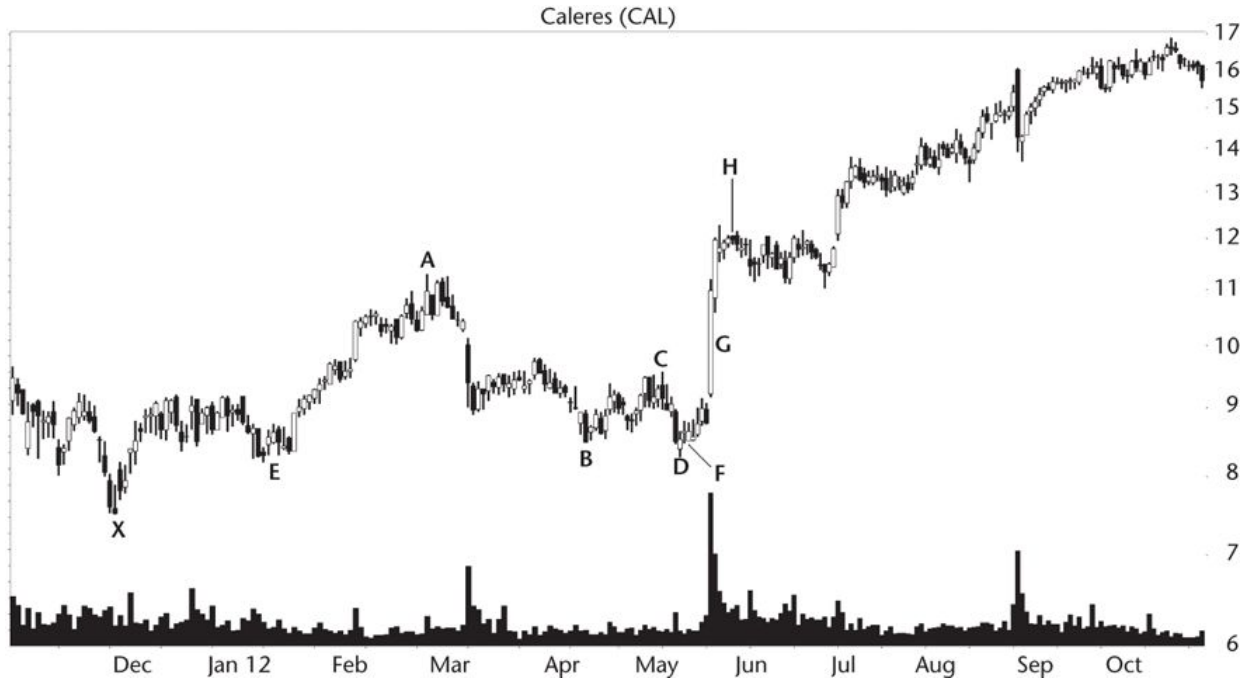


Figure 38.4 Jacob bought after this Gartley completed but sold quickly.

"Two days after the stock reached D [point F on the chart], I bought at the open at 8.51."

He set a target for the top of the pattern, 10.53, which is a few pennies below the low price at A (not above the high at A, because he wanted to sell in the resistance area, not hope price would rise above a peak). Because this was a short-term swing trade, he placed a stop-loss order a few pennies below D, at 8.23, with his broker.

The stock worked its way higher for a week and then took off, making a large one-day price jump. The stock blew through his target, but, fortunately, he didn't place a *sell* order with his broker. "I like to pick my exits [which I think is less profitable for swing trades than picking a target ahead of time and selling automatically if it hits]."

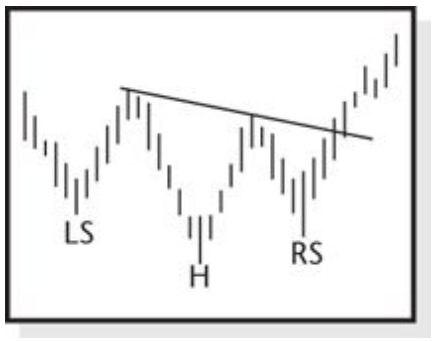
When a stock makes a sharp move higher, as I mentioned, it often crests in a week to ten days. He counted down and one calendar week after the big move (G), "I sold the stock at the open (H) at 12.05 for a gain of 3.82 or 46% in about two weeks. Nice!"

For a swing trade, he did exceptionally well. He bought near the low and missed selling at the peak by a few days (too late). Obviously, for

a longer-term hold, he sold way too early. The stock drifted down for a month but then continued higher.

The rise at G was earnings related (the company announced first-quarter results). Notice the trend, how price peaks quickly (7–10 days), retraces for a month, and then moves higher at a more sedate pace over many months. You may notice this behavior in other stocks related to the announcement of surprisingly good earnings. They can make for profitable trades, both swing trades like Jacob's and longer-term holds.

39
Head-and-Shoulders Bottoms



RESULTS SNAPSHOT

Appearance: Three-valley pattern with center valley lower than the others so that the pattern resembles an inverted head-and-shoulders bust.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Intermediate-term bullish reversal
Performance rank	13 out of 39	10 out of 20
Breakeven failure rate	11%	9%
Average rise	45%	28%
Volume trend	Downward	Downward
Throwbacks	65%	66%
Percentage meeting price target	71%	51%
Synonym	Inverse head-and-shoulders	
See also	Head-and-shoulders bottoms, complex, triple bottom	

I find it easier to pick tops rather than bottom patterns. Perhaps this is because I spend so much time worrying about when to sell. Placing

a trade is easy; getting out for a profit is the tough part. In my quest to sell at the appropriate time, I have often overlooked the buy side: bottom reversals. Head-and-shoulders bottoms are just such a pattern. They are quite easy to spot and can be profitable.

The Results Snapshot highlights statistics for this bullish reversal. The performance rank is good but not outstanding. The head-and-shoulders pattern has a low breakeven failure rate and a nice average rise. Volume trends downward between the two shoulders, and that's typical for many chart patterns. Throwbacks occur in two of every three patterns. Again, that's typical. In fact, I don't see anything unusual with the numbers. Grab your bag lunch and let's start the tour.

Tour

What does the chart pattern look like? **Figure 39.1** shows an example of a head-and-shoulders bottom. The stock peaks during February, where the chart begins. From that point, the stock moves downward and makes a lower low in late March before moving up. The turn forms the left shoulder. The stock declines again and reaches a new low during late April, creating the head. The right shoulder appears as the stock recovers and then continues moving down along the trendline (shown in the figure as the neckline). By mid-August 1995 (not shown), the stock is trading just below 60.

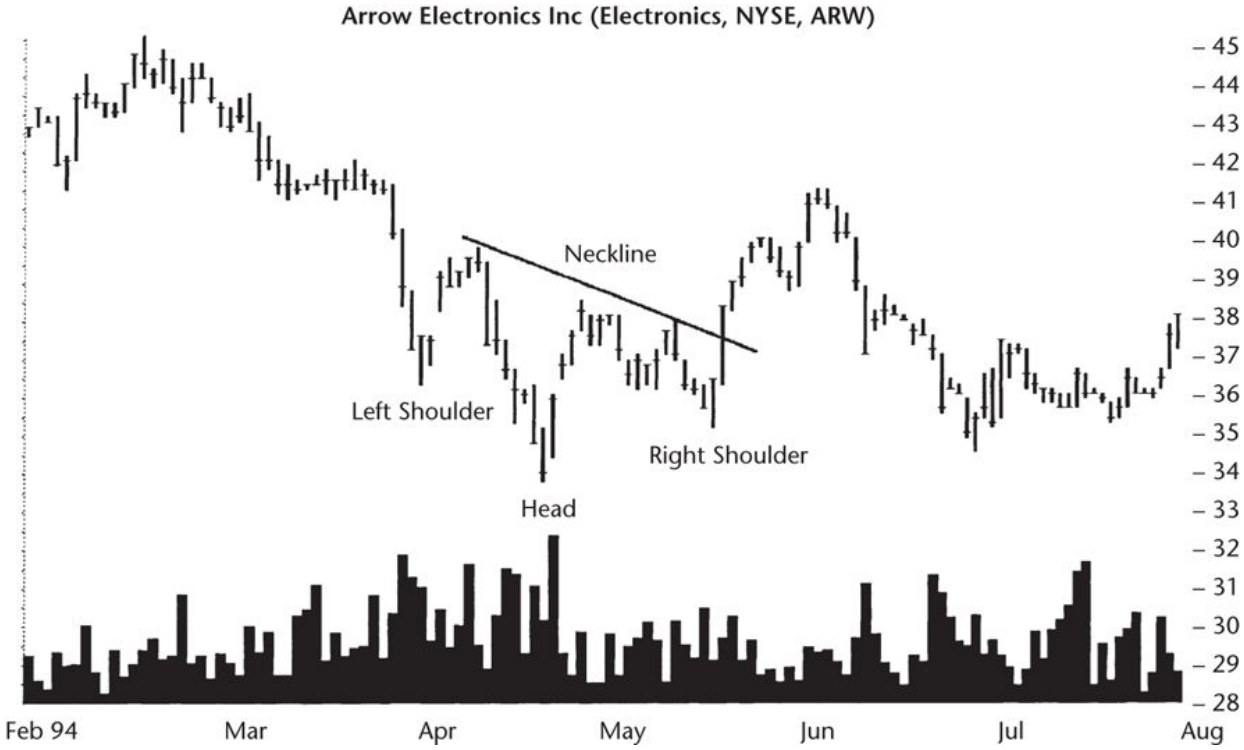


Figure 39.1 A head-and-shoulders bottom. Two shoulder troughs surround a lower head.

This head-and-shoulders bottom has a typical volume pattern. Volume is usually highest on the head, then the left shoulder, and even lower on the right shoulder. This head-and-shoulders pattern shows little increase in volume during the rise from the head to the right shoulder. Volume on the breakout is unexciting and that helps explain why the stock stalls. Upward momentum fails to carry price

much higher; the stock rounds over and heads back down through June.

Figure 39.2 shows a head-and-shoulders pattern on a weekly scale. I chose this chart to show you the typical trend of head-and-shoulders bottom reversal. It usually forms after an extended price downtrend. As a reversal, once the chart pattern completes, price rises.

Why do head-and-shoulders form? The chart pattern represents a struggle to find the bottom, the lowest price that represents the best value. As the stock descends during the winter of 1993, investors nibble at the stock in increasing numbers. Volume climbs even as the stock descends until it spikes upward for 1 week during formation of the left shoulder.

Buying demand puts a crimp on the downward slide, and price moves up but only for a week. The following week, price moves lower. Again, volume spikes as the stock makes a new low, and this becomes the head. The smart money is accumulating the stock in anticipation of an eventual rise or a change in the fundamentals. The stock moves up on receding volume, then retreats and forms the right shoulder.

Volume on the three valleys is diminishing. The left shoulder has very high volume, the head exhibits somewhat less volume, and the right shoulder records the lowest volume of the three valleys. Only after price starts moving up from the right shoulder does volume spike upward.

Figure 39.2 Head-and-shoulders bottom pattern on a weekly time scale. It takes several months before this head-and-shoulders bottom stages an upward breakout.

Breakout volume is unconvincing. In late August 1994, price moves decidedly above the neckline and stages a definitive breakout. Even so, it is not until 2 weeks later that volume advances noticeably.

Identification Guidelines

Table 39.1 encapsulates the identification guidelines for head-and-shoulders. Consider Figure 39.3, a handsome head-and-shoulders bottom on the daily chart. This example of a head-and-shoulders does not appear at the end of a long-term downtrend but at a short-term one (up to 3 months). The pattern reverses the downtrend but continues the long-term uptrend (acting like the corrective phase of a measured move up chart pattern).

Appearance. Overall, the pattern sports the three telltale valleys: left shoulder, head, and right shoulder. The left shoulder is at about the same price level as the right one and appears to be about the same width. Such symmetry is common in head-and-shoulders patterns (tops, bottoms, and the complex variety). If the left shoulder is sharp or pointed, the right shoulder will be, too (but be flexible in your assessment). I don't pay attention to shoulder shape.

The head is below both shoulders by a reasonable amount. By this characteristic I mean the pattern is not a triple bottom—three valleys at about the same price level. The head should be proportional to the shoulders. Consider discarding a pattern with an unusually tall neck or shoulders too uneven to be healthy.

Table 39.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price declines into a three-valley pattern with the center valley below the other two. It looks like a head-and-shoulders bust flipped upside-down. The three valleys and two minor rises should appear well defined. Price moves higher after the pattern ends.
Symmetry	The left and right shoulders should be opposite one another about the head, somewhat equidistant in both time and price. There are wide variations, but the pattern is noticeably symmetrical about the head.
Volume	Usually highest on the left shoulder or head and diminished on the right shoulder.
Neckline	A line that connects the rise between the two shoulders. A neckline pierce signals an upward breakout. For up-sloping necklines, use the right armpit as the breakout price.
Breakout direction	The breakout is upward, usually on high volume that powers price upward. A low volume breakout is *not* an indicator of an impending failure.
Confirmation	Price must close above a down-sloping neckline or above the price of the right armpit.

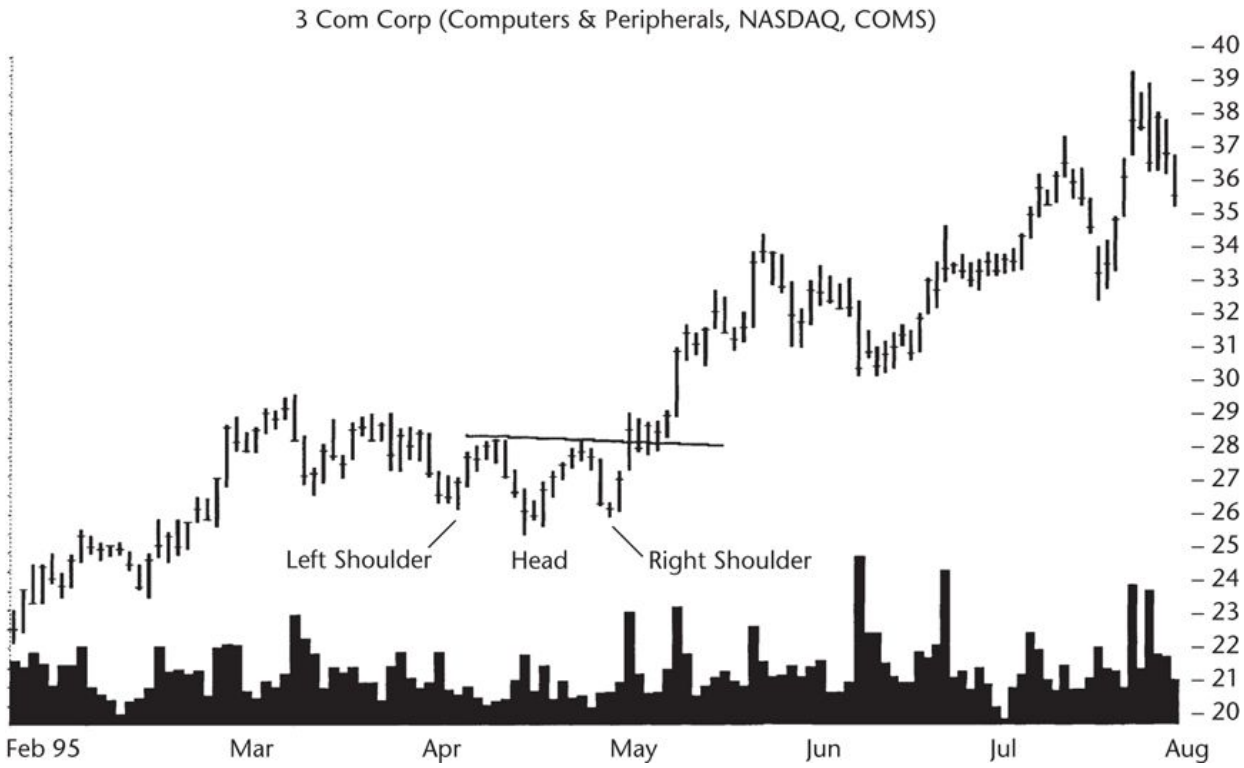


Figure 39.3 A rare head-and-shoulders consolidation of the primary uptrend.

In the figure, the left shoulder sees price decline for 3 days, reverses, and climbs to a minor high. Similarly, the rise between the head and right shoulder climbs almost to the height of the rise between the left shoulder and head, then descends to the right shoulder. All five features, the three valleys and two minor rises, appear well defined and distinct. The features are important as you scan your charts looking for head-and-shoulders bottoms.

Symmetry. Symmetry is another important key to selecting a valid head-and-shoulders bottom. The right side of the pattern usually mimics the left side. The right shoulder declines to about the price level of the left shoulder and the distances of both from the head are similar. Of course, there are many variations, but symmetry should make a head-and-shoulders bottom stand out from a sequence of any three depressions.

Volume. Volume represents another clue to the validity of a bottom. The left shoulder or head has the highest volume, with diminished volume on the right shoulder.

Breakout volume is usually high as it pushes price above the neckline. As a general guideline, volume will rise on the day of the breakout, but it need not. Don't discard a pattern because it has an unusual volume pattern.

Neckline. The neckline is an imaginary line connecting the two rises between the shoulders and the head. It can slope downward, upward, or be horizontal. In well-formed patterns, the slope of the line is not very steep, but a steep neckline should not be a disqualifier of a head-and-shoulders bottom (Figure 39.1 has a rather steep neckline).

Breakout direction. When price closes above a down-sloping trendline or above the right armpit (the highest high between the head and right shoulder), that occurrence signals an upward breakout. Use the right armpit as the breakout price instead of an up-sloping neckline because you may get a buy signal sooner. You may never get a signal in a head-and-shoulders bottom with a steep up-sloping neckline.

Confirmation. The pattern confirms as valid when price closes above the neckline or right armpit. If price closes below the head, then it's not a head-and-shoulders bottom.

Focus on Failures

Head-and-shoulders bottoms have two types of failures. The first type, shown in **Figure 39.4**, is a failure of the head-and-shoulders bottom to pierce the neckline and move higher. As you would expect, the chart pattern appears in a downward price trend. The highest price peak is partly visible in the upper-left corner of the figure. From the high of 38.75, price falls to the low at the head, 21.25, a decline of 45%. When the bottom forms, it should signal a trend reversal.

An interesting thing about this example is that the left shoulder is almost the same shape as the right. Only a dollar separates the two shoulder lows, and the head is well below both shoulder valleys. The right shoulder is somewhat farther away from the head than the left. This characteristic is typical.

Figure 39.4 Failure of a head-and-shoulders bottom to stage an upward breakout.

Volume is suspiciously low throughout the pattern. The left shoulder and head register about the same level of volume. The right shoulder volume, however, is higher than the other two. Of course, an irregular

volume pattern is no reason to discard a chart pattern, but it is a warning signal.

After the right shoulder forms and price begins rising, volume tapers off rapidly, and the attempt to pierce the neckline fails. The rally attempt does not even come close to the neckline.

Looking at the overall chart pattern, there is no one item that signals an impending failure. There is some suspicious activity, principally the abnormal volume pattern, but nothing to deter an investor.

Figure 39.5 shows a slightly different type of failure. This is what I call a 5% failure. The two shoulders and head appear well formed and distinct. The left shoulder looks different from the right, but the twin rises between the shoulders (armpits) look similar. The price level of the two shoulders is not suspiciously out of line.

Volume is unusual. Heavy volume appears near the head as price rises away from it toward the right shoulder. The right shoulder volume looks like something you would want to tackle with your shaver: annoying but not high enough to be alarming.

Price advances smartly after the right shoulder bottom forms and then moves sideways for 2 weeks before starting back down.

Although this example does have an upward breakout, price fails to rise by more than 5% above the neckline. Price should reach 39.38 to meet the 5% threshold, but does not. The result is a failure of the 5% rule: Price must rise by more than 5% after a breakout or the chart pattern is a dud.

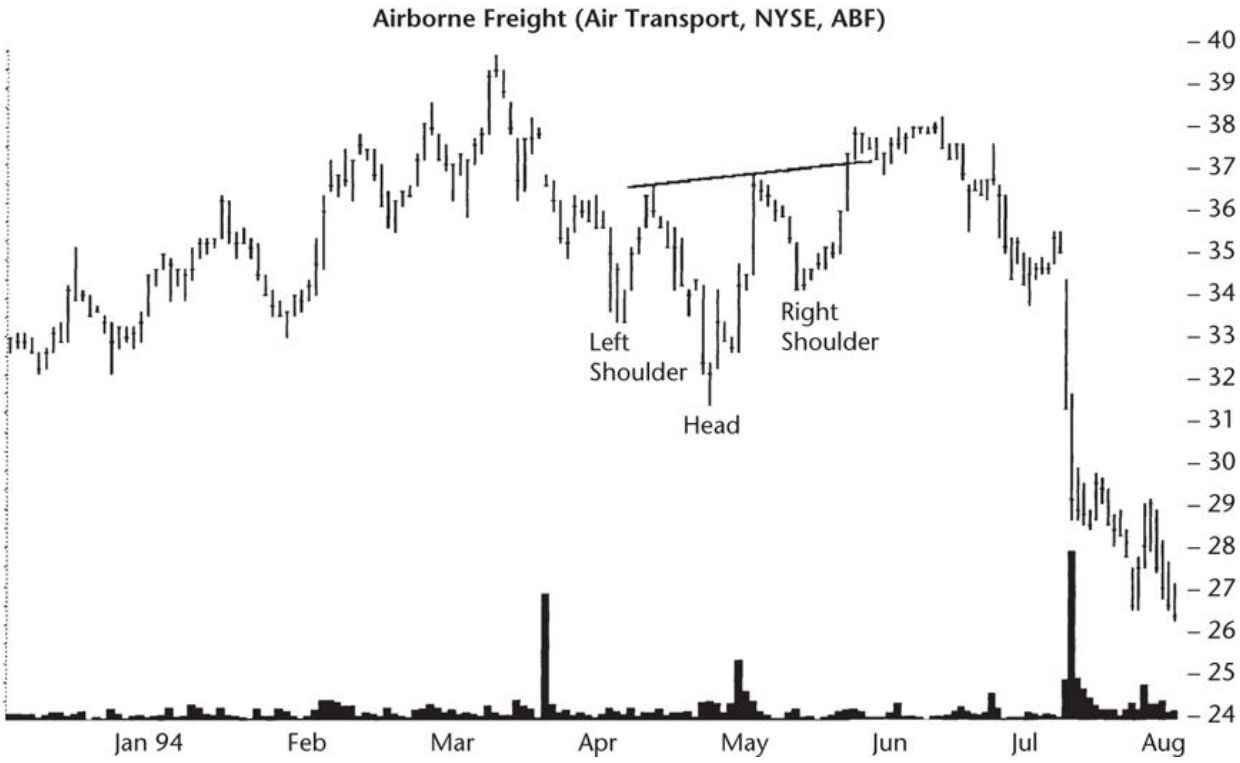


Figure 39.5 A 5% failure in a head-and-shoulders bottom. Price must rise by more than 5% before the chart pattern is a success. A 5% rise should take price to 39.38 but it does not happen.

Statistics

Table 39.2 shows general statistics.

Number found. I found the first head-and-shoulders in July 1991 and the last in December 2019 in 1,036 stocks, giving me 3,832 patterns. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. By definition, head-and-shoulders bottoms act as reversals of the prevailing downward price trend.

Average rise. In bull markets, the average rise is above the 42.4% average in bull markets and ties the 28% rate in bear markets.

Standard & Poor's 500 change. The general market rise helps push price higher in bull markets but doesn't offer much assistance in bear markets. Notice, though, how the average rise for the head-and-shoulders bottom wallops the S&P's rise, even though both use the same dates (breakout to ultimate high).

Days to ultimate high. Price climbs 1.6 times faster in bear markets. I found this by taking the ratio of 45% rise in 227 days compared to a rise of 28% in 91 days. That is an interesting finding if you happen to be in a bear market. Although the average rise will not be as large, price will top out sooner, allowing you to trade more often.

How many change trend? This is a count of how many patterns see price rise more than 20% after the breakout. A higher number is better. I like to see values above 50%, and the bull market does very well. The bear market comes close, too. So the head-and-shoulders bottom is a good performer.

Table 39.3 shows failure rates. I found that 11% of the patterns in bull markets fail to see price rise more than 5%. The failure rate doubles to 22% for patterns failing to rise more than 10% (*ouch!*). It almost triples the breakeven rate for failures to rise more than 15% (*Yikes!*).

Table 39.2 General Statistics

Description	Bull Market	Bear Market
Number found	3,197	635
Reversal (R), continuation (C) occurrence	100% R	100% R
Average rise	45%	28%
Standard & Poor's 500 change	13%	1%
Days to ultimate high	227	91
How many change trend?	61%	46%

Table 39.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	336 or 11%	60 or 9%
10	371 or 22%	125 or 29%
15	319 or 32%	83 or 42%
20	235 or 39%	74 or 54%
25	235 or 47%	65 or 64%
30	190 or 53%	48 or 72%
35	196 or 59%	25 or 76%
50	381 or 71%	59 or 85%
75	403 or 83%	54 or 93%
Over 75	531 or 100%	42 or 100%

Table 39.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 45%, M 46%, H 44%	L 30%, M 26%, H 28%
Throwbacks occurrence	65%	66%
Average time to throwback peaks	7% in 6 days	8% in 6 days
Average time to throwback ends	12 days	11 days
Average rise for patterns with throwbacks	43%	25%
Average rise for patterns without throwbacks	50%	33%
Percentage price resumes trend	75%	65%
Performance with breakout day gap	48%	32%
Performance without breakout day gap	45%	27%
Average gap size	$0.43	$0.76

Bear markets show a steeper progression, from 9% to 29% to 42%.

In bull markets, the median failure rate is 27.5% and in bear markets, it's 18.7%.

Table 39.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is always upward. If price closes below the head first, then you don't have a head-and-shoulders bottom. In fact, a close below the right shoulder would make the pattern look weird, too. However, it might be forming a complex head-and-shoulders bottom.

Yearly position, performance. Head-and-shoulders patterns in bull markets do not show a significant performance difference depending on where in the yearly high–low price range the breakout resides. The numbers say the middle third perform best. In bear markets, those near the yearly low do best.

Throwbacks. Throwbacks occur two-thirds of the time, and when they do happen, it takes about 11 or 12 days for the stock to return to the breakout price. If a throwback occurs, performance suffers. However, price resumes the upward trend between 65% and 75% of the time.

Gaps. Does a gap on the breakout day indicate better performance? Yes. Head-and-shoulders bottoms with a breakout gap perform better than do those without a gap. I use the opening price the day after the gap in the measure to the ultimate high, so you can participate in the better performance of patterns with gaps by buying after the gap appears.

Table 39.5 shows size statistics for the head-and-shoulders pattern.

Height. Most chart patterns perform best when the pattern is taller than the median, and the head-and-shoulders is no exception. In bear markets, for example, tall patterns see price rise an average of 32%, but short ones rise just 24%. I measured height from the highest high to the lowest low in the pattern, then divided by the breakout price, so I was comparing apples to apples.

Width. The results for width are not consistent across market conditions. Bull markets show wide patterns leading to better performance, and bear markets show narrow ones outperforming.

I used the median length to separate narrow from wide patterns.

Height and width combinations. I looked at the combinations of height and width and found that patterns both tall and wide do well in bull markets. Bear markets prefer tall and narrow patterns. The worst performers are short patterns, but check the tables for actual numbers because they vary for different market conditions.

Table 39.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	47%	32%
Short pattern performance	43%	24%
Median height as a percentage of breakout price	13.4%	19.8%
Narrow pattern performance	44%	31%
Wide pattern performance	46%	25%
Median width	37 days	39 days
Short and narrow performance	42%	26%
Short and wide performance	44%	21%
Tall and wide performance	48%	28%
Tall and narrow performance	47%	40%

Table 39.6 shows volume-related statistics.

Volume trend. Volume trends downward most of the time. Again, don't throw away a pattern just because it has an unusual volume trend.

Rising/Falling volume. I didn't see any performance difference for rising or falling volume in bull markets. Bear markets do better if volume is rising from shoulder to shoulder.

Breakout day volume. Does high breakout volume guarantee better performance? No, at least not in bull markets. In bear markets, those with heavy breakout volume performed better than did those with light breakout day volume.

Table 39.7 shows how often price reached a stop location but my computer doesn't tabulate them correctly for this pattern, so I don't show the table.

Table 39.8 shows the performance over three decades.

Performance over time. This pattern performed best in the 2000s and worst in the 2010s, but the performance differences are minor.

Seeing a pattern with stable performance over time is as refreshing as sipping ice water on a hot day.

Table 39.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	65% down	65% down
Rising volume trend performance	45%	30%
Falling volume trend performance	45%	27%
Heavy breakout volume performance	45%	29%
Light breakout volume performance	45%	26%

Table 39.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	45%
2000s	46%
2010s	44%
Performance (above), Failures (below)	
1990s	5%
2000s	9%
2010s	17%

Failures over time. Failures have tripled since the 1990s, which is an alarming trend (if it continues).

Table 39.9 shows busted pattern performance.

Busted patterns count. I consider the busted count low for this chart pattern.

Busted occurrence. Most of the time, the pattern will single bust, but double busts (in bull markets) are close behind. In bear markets, nearly all of the busted patterns are single busted ones.

Busted and non-busted performance. I used the head-and-shoulders *top* as the proxy for a non-busted head-and-shoulders *bottom*. In bull markets, single busted patterns outperform the other

two benchmarks, but in bear markets, they don't do as well as a head-and-shoulders top pattern.

Trading Tactics

Table 39.10 shows trading tactics.

Measure rule, targets. Use the measure rule to set a target to help gauge how far price might rise. In Figure 39.6, the head marks the lowest price in the chart pattern. Subtract the height from the value of the neckline directly above. In this example, the head has a daily low price of 13.13, and the neckline, measured vertically, is at 17.50. Add the difference, 4.37, to the breakout price. A breakout occurs on 28 March. I use its opening price the next day as the breakout price (15.88) to get a target price of 20.25. Price reaches the target in early September.

The lower portion of the table shows how often the measure rule target works using varying heights in the computation. The full height, as I used in the above example, works between 51% and 71% of the time, depending on market conditions (bull or bear).

Cut the height in half and the measure rule works better, but the potential profit is less. Use a taller height, and the rule won't work as often, but when it does, you have the opportunity to make more.

Table 39.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	505 or 16%	94 or 15%
Single bust count	238 or 47%	75 or 80%
Double bust count	181 or 36%	10 or 11%
Triple+ bust count	86 or 17%	9 or 10%
Performance for all busted patterns	–13%	–19%
Single busted performance	–22%	–23%
Non-busted performance (head-and-shoulders tops)	–16%	–24%

Table 39.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern's height by subtracting the value of the lowest low reached in the head from the neckline, measured vertically. Add the difference to the breakout price. The result is the target price. For up-sloping necklines, use a close above the right armpit as the breakout price. The bottom portion of the table shows how often the measure rule works.
Wait for confirmation	It's always best to wait for price to confirm the pattern. Wait for an upward breakout.
Watch for throwback	If you miss the upward breakout, wait. The majority of the time, the stock will throw back to the neckline. Once it does, buy the stock or add to your position.

Description	Bull Market	Bear Market
Percentage reaching half height target	86%	74%
Percentage reaching full height target	71%	51%
Percentage reaching 2× height	50%	26%
Percentage reaching 3× height	38%	15%

Once you know how far price might rise, check Table 39.3 to see if it's realistic. In our example, the target is 4.37 away in a stock trading at 15.88 for a value of 27.5% (or 4.37/15.88). Table 39.3 says that 50% (interpolating between 25% and 30%) of the patterns in bull markets will fail to see price rise more than 27.5%. That's a high failure rate.

Wait for confirmation. Wait for price to close above a down-sloping neckline or above the right armpit before trading. That is always the safe play. If you don't wait for confirmation, there's a chance price will break out downward instead of upward.

Watch for throwback. Since a throwback occurs frequently (see Table 39.4), if you miss the breakout, you may have another chance to invest or trade the pattern. Buy once price resumes its upward trend after the throwback completes.

Table 39.11 shows special features of the head-and-shoulders pattern. However, I don't include bear market statistics because they show no performance advantage.

Neckline slope. Head-and-shoulders patterns with down-sloping necklines performed slightly better than up-sloping ones.

Shoulder lows. “Left shoulder above right.” I am comparing the lowest price in each shoulder. When the left shoulder bottomed above the right, the average rise after the breakout was 43%. When the left shoulder bottomed below the right, performance improved, to 47%.

Table 39.11 Special Features

Description	Bull Market
Neckline slopes up, performance	44%
Neckline slopes down, performance	46%
Left shoulder above right, performance	43%
Left shoulder below right, performance	47%

Experience

I have traded this chart pattern a lot over the decades. I looked through most of my trades and found these common elements.

- Do buy in early (at the breakout and not much later). Place a buy stop at the neckline or right armpit. That means you get in on time, at the breakout. If the breakout has already happened, then wait for a throwback for a better entry price.
- Don't attempt to buy before confirmation. You'll likely suffer a loss when the pattern doesn't confirm. I tried this a few times and made a significant amount of money, but it's risky.
- Five percent failures happen fast, usually in a week or two. Do place a stop below the right shoulder low. That will act as a tourniquet and stop the bleeding.
- Price moves up for about 2 months, but this range varies from 1 month to 3 months. That's the time to exit a swing trade. It likely won't be the ultimate high, but there seems to be a pattern to this, where price spikes 2 months after the breakout. In eight trades, five of them peaked in 2 months, two in 1 month and one in 3 months. If the stock looks to be peaking around the 2 months mark, then do your research and see if it's time to exit with a profit.

Sample Trade

Some people might consider Bob unlucky, but he has an adoring wife and two children. Employed as a blue-collar worker in a nearby auto plant, he is happy when he is working. Unfortunately, strikes by the union have taken their toll on his savings, and he has been looking for ways to supplement his income.

“Ever since I was a boy, I've been fascinated by Wall Street. I wanted to play the stock market, and when I saw the head-and-shoulders bottom pictured in **Figure 39.6**, I took the plunge.” He bought the stock at $16, the day after price pushed through the neckline.

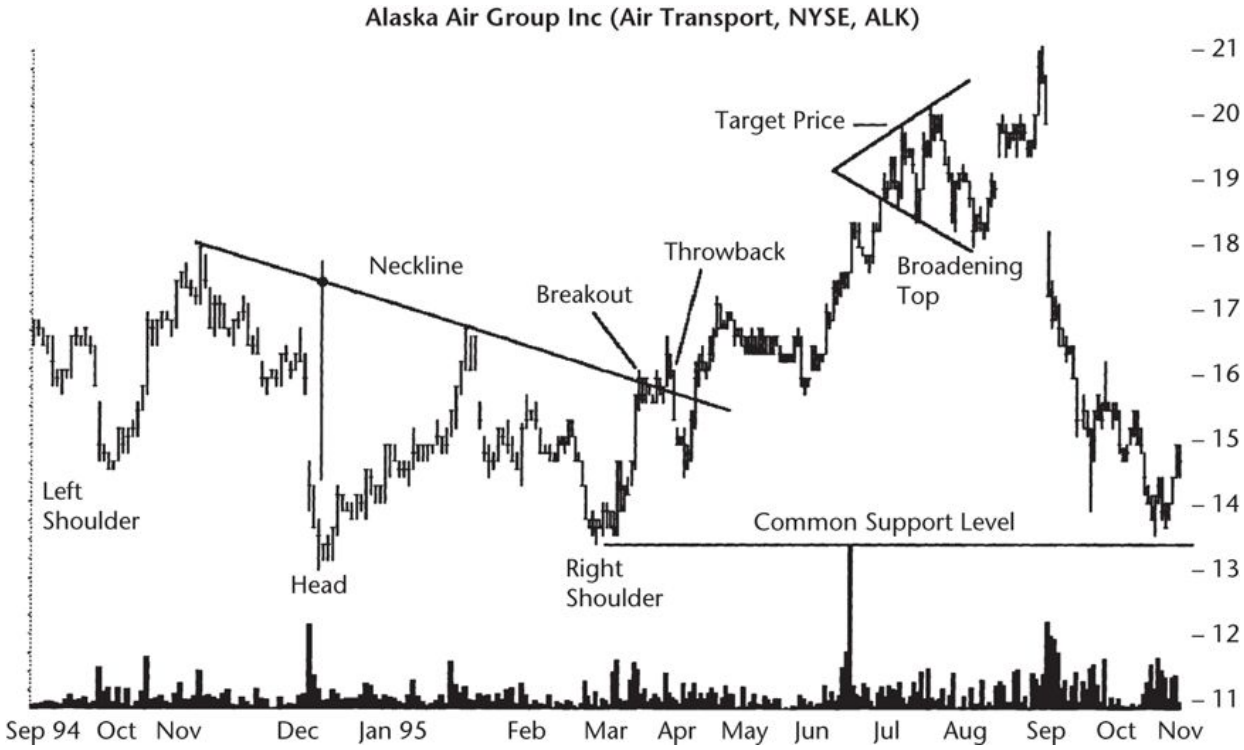


Figure 39.6 A head-and-shoulders bottom. Compute the measure rule by subtracting the lowest low from the neckline vertically to find the formation height. Add the height to the breakout price. The result is the target price to which the stock may climb. A broadening top appears in July, near the target.

For over a week, the stock did fine. Price slowly moved up and reached a high of 16.63, then reversed. The stock threw back to the neckline and continued lower. Suddenly, he was losing money.

“Should I sell and take a loss or hang on because I knew the stock was going higher? That question kept me awake at night.”

He decided to tough it out. The stock bottomed at 14.50 and quickly recovered. It reached a higher high and then moved sideways for over a month, drifting slightly lower. “I wasn't worried because I was making money now, not a lot, but some. I was sleeping better, too.”

During the summer, things heated up for the airline and the stock took off. Almost on a daily basis, it flew higher, making new highs. A bearish broadening top appeared, but Bob did not know about such things. He felt giddy in the thin atmosphere in which the stock was flying. The stock entered the clouds at 21.38.

When the airline stock hit turbulence in mid-September and headed for the ground, “I couldn't believe it. All I could do was watch my profit spin lower like the stock's altimeter. So I talked it over with my wife, and we decided to hold on. It'll come back to its old high, and when it does, I'll sell it.”

The stock continued down. Soon, his profits gone, he was posting losses. He maintained his firm stance that he would not sell until the price climbed back to the old level.

During October, things changed (not shown). The stock pulled up just before nosing into the ground, at 13.63, and not only leveled out, but started climbing again. In a month he was at breakeven.

At the start of the new year, a descending broadening wedge took price lower as it widened but turned out to be a bullish omen. In mid-January, on unremarkable volume, the stock turned the corner. Volume climbed, helping price reach a higher altitude.

As the stock closed in on his target of 21.38, “I called my broker and placed an order to sell at 21.38.” In late February, the stock began a straight line run. It soared through 21.38, hitting his sell order, but kept climbing. In just over a month it reached 30.

Bob blushed and admitted, “I no longer invest in stocks.”

40
Head-and-Shoulders Bottoms, Complex

RESULTS SNAPSHOT

Appearance: An inverted head-and-shoulders pattern with multiple heads, multiple shoulders, or both.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Intermediate-term bullish reversal
Performance rank	9 out of 39	6 out of 20
Breakeven failure rate	7%	12%
Average rise	47%	32%
Volume trend	Downward	Downward
Throwbacks	66%	67%
Percentage meeting price target	71%	45%
See also	Cup with handle; head-and-shoulders bottoms; rounding bottoms, triple bottom	

I find that a complex head-and-shoulders bottom (which I refer to as a *complex bottom* in this chapter) is more difficult to recognize than a

normal head-and-shoulders bottom but not alarmingly so. If you can locate a normal head-and-shoulders bottom, then there is a decent chance that you are also looking at a complex one. If you look to the left and right of the two shoulders, you might see additional shoulders. Multiple shoulders are one indication of a complex bottom. Before I delve too far into pattern recognition, let me review the important snapshot statistics.

The complex head-and-shoulders bottom is a strong performer with a low breakeven failure rate (ranking third out of 39 in bull markets when a rank of 1 has the lowest failure rate) and a very good average gain after the breakout. Volume typically slopes downward, and about two-thirds of patterns have throwbacks to the breakout price.

Let's see what these chart patterns look like.

Tour

There are two types of complex head-and-shoulders bottoms: those with multiple shoulders and those with multiple heads. I can't recall seeing a head-and-shoulders bottom with multiple heads *and* multiple shoulders, but I'm sure they exist.

Consider the chart in **Figure 40.1**, which shows a complex bottom. The chart pattern has two left shoulders, a single head, and two right shoulders. If you were scanning your charts for normal head-and-shoulders bottoms, this one would probably pop up on your radar. The left and right shoulders are well defined, and the head is below them. As you widen your view, you see an additional pair of shoulders; the left shoulder is about the same distance from the head as the right one. The two outermost shoulders are near the same price level, too.

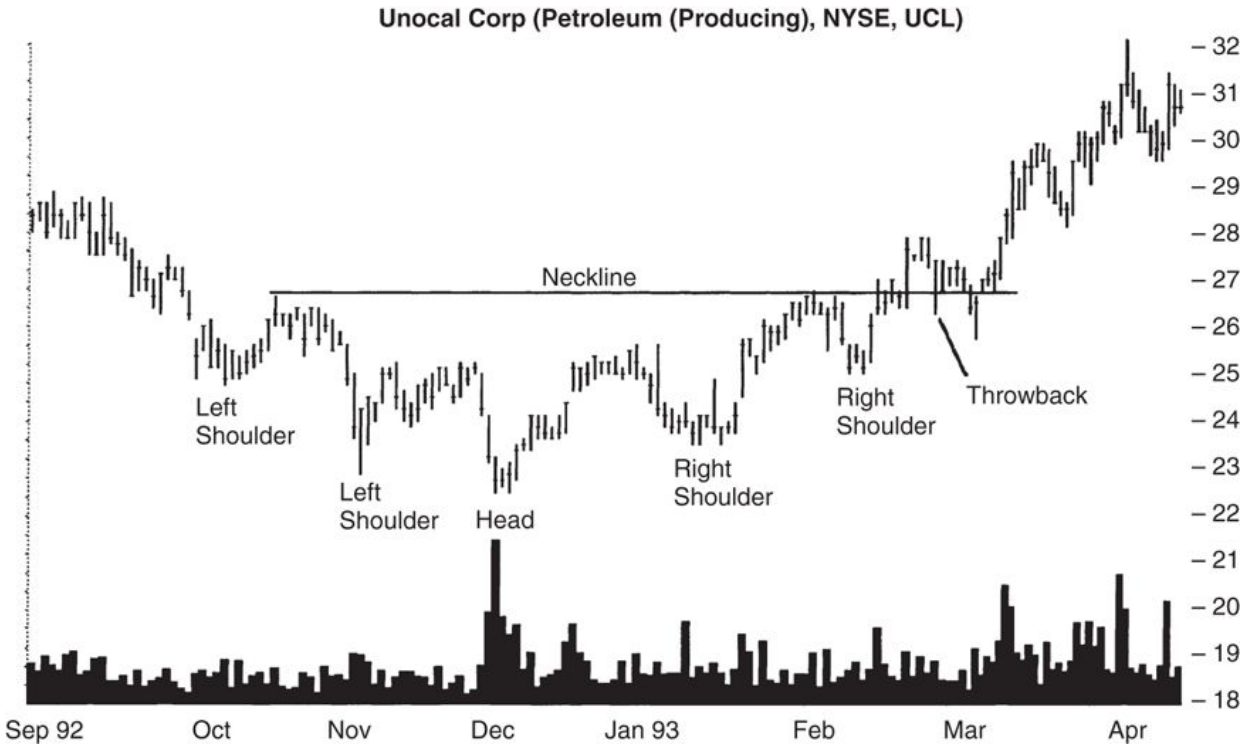


Figure 40.1 A dual-shoulder complex head-and-shoulders bottom. Notice the horizontal neckline and throwback to it. The formation is part of a rounding bottom chart pattern.

Looking at all the shoulders and the head together, the chart is a good example of a complex head-and-shoulders bottom. However, the

volume pattern is unusual because it is heavier on the right than on the left. Most of the time, the left shoulders show higher volume than the right ones.

If you ignore the various labels, you can see a rounding bottom. The gentle turn of price (if you connect the minor lows) supports a bottom pattern. However you choose to classify this pattern, the bullish reversal is clear.

A throwback appears in March when the stock returns to the neckline. Although it takes a week or two before price really begins moving up, the stock climbs to a high of 32.63 before retracing its gains.

Compare Figure 40.1 with **Figure 40.2**, a complex bottom with two heads. Overall, the chart pattern is quite symmetrical. There are two shoulders and two heads. A neckline connects the highs in the pattern and projects forward in time until price closes above it. The penetration of the neckline is the breakout point. Notice how flat (almost horizontal) the neckline appears. A near-horizontal neckline is a feature you can look for when prospecting for complex head-and-shoulders bottoms. The regular head-and-shoulders tend to have steeper necklines than the complex variety. Figure 40.1 also shows a horizontal neckline.

In Figure 40.2, the breakout in mid-November quickly throws back to the neckline and price moves lower for a week or two. This is not a good example of a throwback because price didn't rise far enough to show whitespace between the stock and the neckline. Figure 40.1 shows a better example of a throwback where price lifts off, curls around, and returns to the neckline, leaving behind a white hole inside the looping price movement.

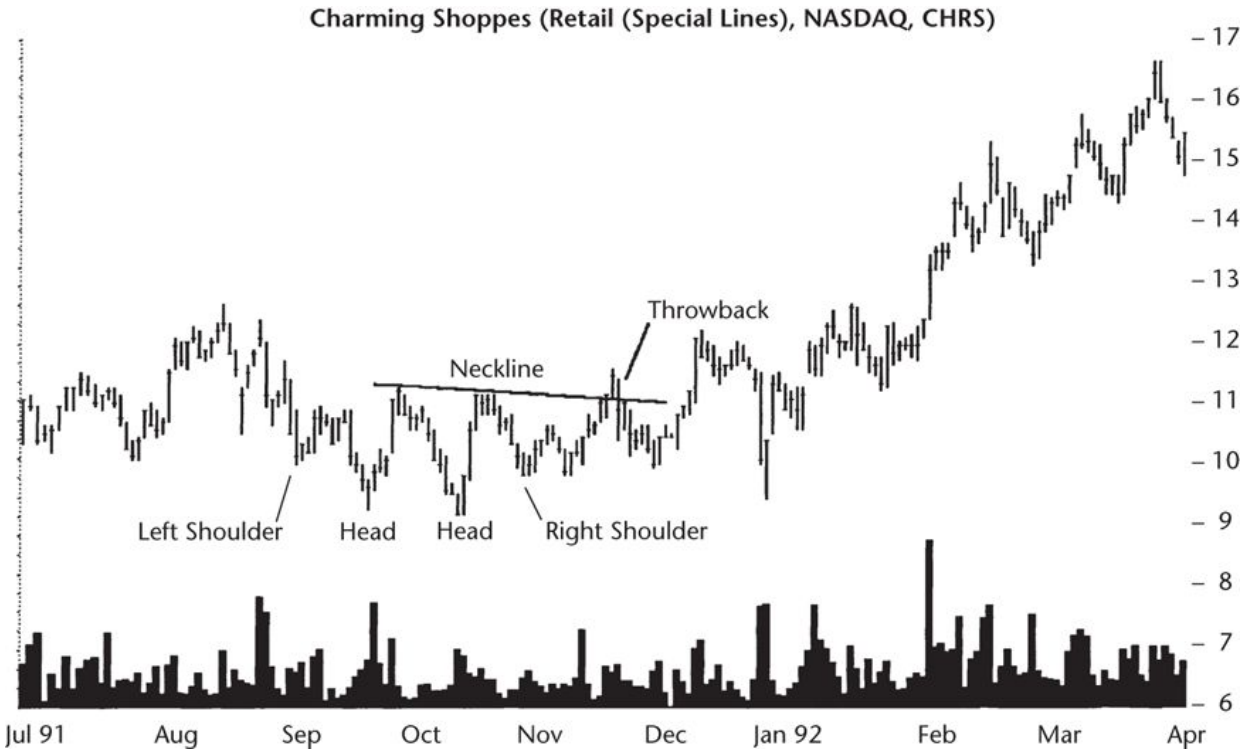


Figure 40.2 A dual-head reversal. Volume on the left side of the pattern is higher than on the right.

In Figure 40.2, by late March the stock reached a high of 16.63, well above the head low of 9.19. Volume on the left side of the chart pattern is heavier than on the right. In this regard, the pattern is more typical than that shown in Figure 40.1.

Identification Guidelines

Are there certain characteristics that make complex bottoms easy to identify? Yes, and I outline them in **Table 40.1**.

Appearance. As discussed before, there are two general types of complex head-and-shoulders bottoms: those with multiple shoulders and those with multiple heads (rarely do you have both). **Figure 40.3** shows a complex bottom with multiple shoulders. The head is slightly below the shoulders but far enough below to distinguish the chart pattern from a triple bottom.

Table 40.1 Identification Guidelines

Characteristic	Discussion
Appearance	A head-and-shoulders bottom with multiple shoulders, multiple heads, or (rarely) both. The head is lower than the shoulders but generally not by very much.
Symmetry	The tendency for the shoulders to mirror themselves about the head is strong. The price level of the shoulders and time distance from the shoulder to head is about the same on either side of the head. The shoulders also appear to be the same shape: Narrow or wide shoulders on the left mirror the right.
Volume	Usually higher on the left side than the corresponding shoulders on the right. Overall, the volume trend recedes. Volume is usually highest on the head.
Near horizontal neckline	Connects the highest rise on the left and right of the head(s). Many, but not all, complex bottoms have near-horizontal necklines. Be suspicious of patterns with steep necklines: They may not be valid complex head-and-shoulders bottoms.
Breakout direction	A breakout occurs when price closes above the down-sloping neckline. For those cases with an up-sloping neckline, use the highest price between the head and rightmost shoulder as the breakout price. The breakout is always upward.
Confirmation	The pattern confirms as valid when price breaks out upward. If price first closes below the bottom of the head, then it's not a valid complex head-and-shoulders bottom.

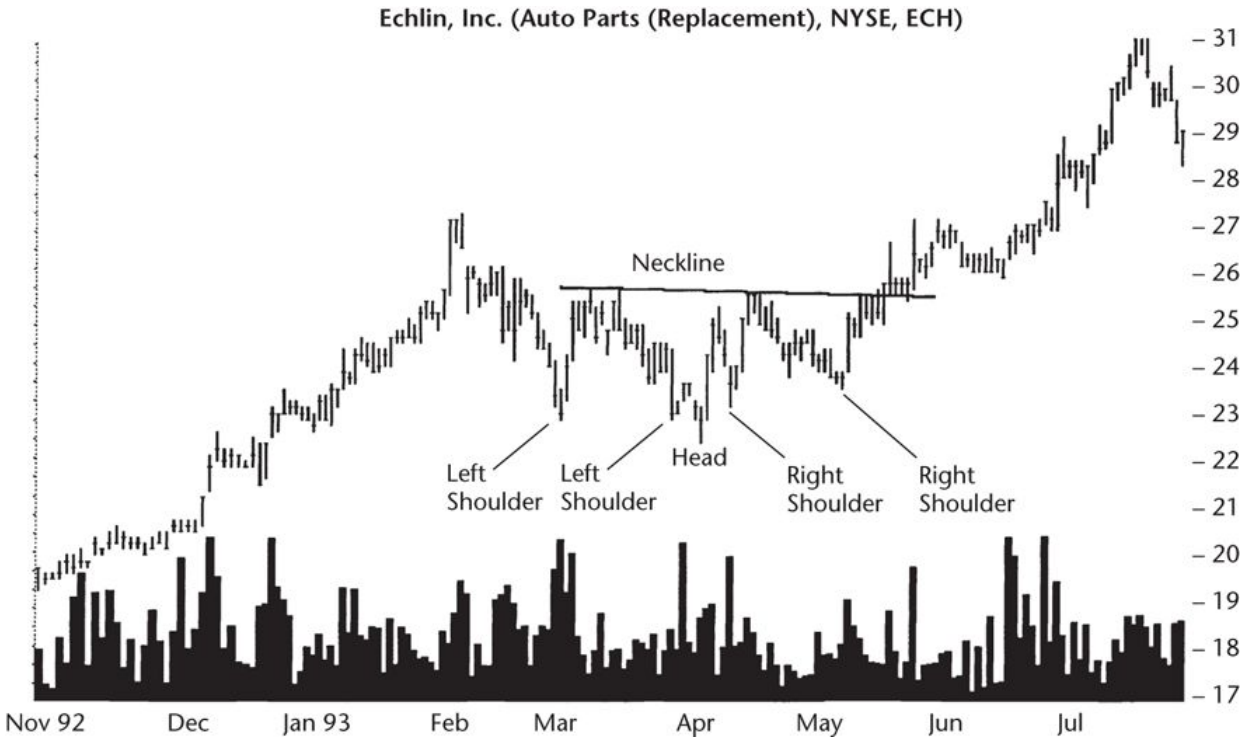


Figure 40.3 A complex head-and-shoulders consolidation. The trend resumes moving up once the formation completes.

Symmetry. In this case, there is a normal head-and-shoulders bottom flanked by an additional pair of shoulders. The overall pattern appears symmetrical. The two left shoulders match the two on the right in distance. In this example, the two right shoulders are higher than their corresponding left ones. However, do look for symmetry between the shoulders, both in time and price.

Volume. The figure shows the typical volume pattern: The two left shoulders show higher volume than the two right ones. Overall, volume recedes over the length of the chart pattern.

Near horizontal neckline. The neckline connects the highest peak to the left of the head(s) with the highest peak to the right of the head(s). Most of the time the neckline is horizontal or nearly so. Many of the patterns shown in this chapter have near-horizontal necklines. If you see a steep neckline, then recheck your work to make sure you're looking at a valid complex bottom.

Breakout direction. For those patterns with up-sloping necklines, use the highest high on the right side of the head(s) in the complex bottom as the breakout price. Using a steep up-sloping neckline to

gauge the breakout means price may never close above the neckline (or price will rise too far to trigger an entry).

For down-sloping necklines, a close above the neckline signals a breakout. If price closes below the bottom of the pattern before breaking out upward, then it invalidates the pattern. Head-and-shoulders bottom patterns do not break out downward.

Quite often, price throws back to the neckline and perhaps moves lower before resuming the upward trend. Figure 40.2 shows an example of this behavior during November and even in late December. The December move saw price plunge from a high of 11.50 to 9.44, a decline of almost 20% in just 2 days! When the decline ended, price recovered quickly.

Confirmation. Price must break out upward. If it does not, then you don't have a complex head-and-shoulders bottom.

Focus on Failures

If making money in the stock market is important to you, it pays to study your failures. The lessons learned will serve you for many years. When you look at your failures as a group, you may begin to see trends.

Figure 40.4 shows a typical failure of a complex bottom to reverse the downtrend. After the head-and-shoulders completed, price *did* climb, but only to 57.13. Price inched above the neckline and closed there for just a handful of days before sliding below the neckline in early March. Ultimately, the stock reached 40.63 in August (not shown).

The left shoulder showed tremendous volume. Volume diminished at the dual heads, and the right shoulder showed even less volume. Breakout volume was anemic and may explain why the pattern failed.

If price fails to rise more than 5% after the breakout, before closing below the bottom of the complex bottom, then it's a failure. Figure 40.4, for example, is a 5% failure. The breakout was upward, but price failed to climb far before reversing direction. Once price closed below the head, I knew that there was no hope and marked the pattern a failure.

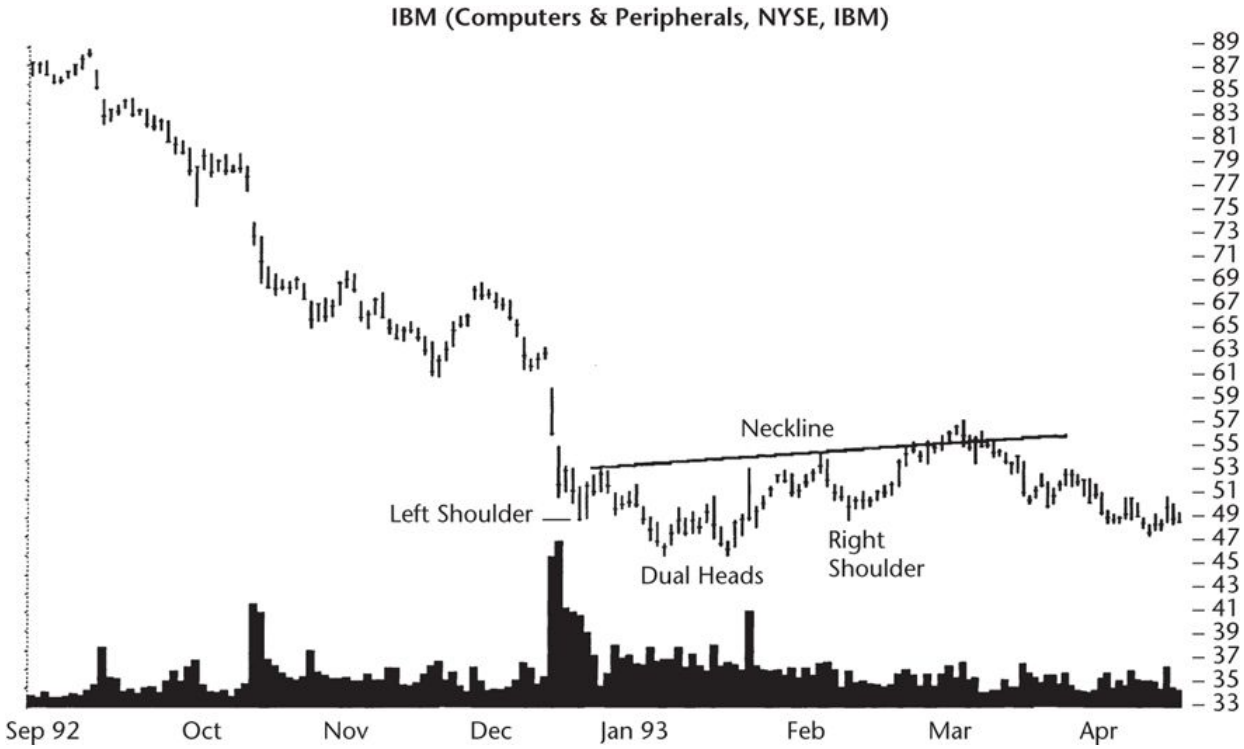


Figure 40.4 A failure of the complex head-and-shoulders pattern to climb more than 5% after an upward breakout. Just 7% of the formations fail in this manner (bull market only).

I found no reliable clues that would indicate an eventual failure of a complex head-and-shoulders bottom.

Statistics

Table 40.2 shows general statistics.

Number found. I found 1,196 patterns in 667 stocks starting from July 1991 to October 2019. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. Complex bottoms have price dropping into the pattern and rising out of it, so all of them act as reversals.

Average rise. The average rise in bull markets is 47%, a good showing (which is why the pattern ranks as high as it does, 9 out of 39). In bear markets, when price breaks out upward, the move is like swimming against the current, and the rise averages less: 32%. However, both numbers are above the average of all chart pattern types.

Standard & Poor's 500 change. In bull markets, a big showing by the S&P helped stocks climb. In bear markets, the help was almost negligible. Using the dates of the breakout to the ultimate high of the complex bottom, the rise in the index falls far short of the move in the chart pattern.

Days to ultimate high. It took almost three times as long for price to reach the ultimate high in bull markets than in bear markets. When you compute the velocity (47% rise in 278 days versus a rise of 32% in 96 days), we see that the bear market rise is twice as fast as the bull market one.

How many change trend? This table row is a count of how many patterns see price climb more than 20% after the breakout. I consider values above 50% to be good. The bull market certainly exceeds that, and the bear market almost does. Nice job, guys!

Table 40.3 shows failure rates. As far as failures go, complex bottoms keep them small. Between 7% (bull market) and 12% (bear market) of the patterns I looked at failed to rise more than 5% (the breakeven rate). Half the patterns failed to rise more than about 30% after bull market breakouts (20% in bear markets).

Table 40.2 General Statistics

Description	Bull Market	Bear Market
Number found	933	263
Reversal (R), continuation (C) occurrence	100% R	100% R
Average rise	47%	32%
Standard & Poor's 500 change	15%	1%
Days to ultimate high	278	96
How many change trend?	64%	49%

As you scan down the columns, notice how quickly the failure rate climbs as the maximum price rise increases. In bull markets, at the 10% maximum price rise, the failure rate is 20%—almost triple the prior row. For the 15% price rise level, the failure rate is more than four times the breakeven rate.

How is this information useful? Imagine that the measure rule predicts a rise to 37.50 from 30, a climb of 7.5 points or 25%. In bull markets, we see that 43% of complex bottoms will fail to see price exceed a 25% rise. In bear markets it's even worse, with 62% failing to exceed the target. Such big failure rates may make you adjust your expectations.

Table 40.4 shows breakout-related statistics.

Breakout direction. By definition the breakout is always up. If price breaks out downward first (by closing below the bottom of the pattern), then it's not a valid complex bottom.

Yearly position, performance. The best performing complex bottoms vary depending on market conditions. In bull markets, for example, the best performing break out in the middle third of the yearly high-low price range.

In bear markets, those within a third of the yearly low do best.

I think the bull market results are suspicious. Rarely do patterns in the middle range perform well, but complex bottoms show an exception.

Throwbacks. A throwback occurs in about two-thirds of the complex bottoms. Price breaks out upward, peaks in an average of 6 days, and returns to the breakout price for a round-trip of 12 days.

When a throwback occurs, performance suffers. That may surprise you, but it is common for chart patterns. My thinking is that a throwback robs upward momentum. The key is to search for overhead resistance before trading and to avoid it when possible.

Table 40.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	62 or 7%	32 or 12%
10	123 or 20%	41 or 28%
15	98 or 30%	38 or 42%
20	57 or 36%	24 or 51%
25	63 or 43%	27 or 62%
30	72 or 51%	18 or 68%
35	62 or 58%	12 or 73%
50	121 or 71%	29 or 84%
75	111 or 82%	17 or 90%
Over 75	164 or 100%	25 or 100%

Table 40.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 46%, M 49%, H 46%	L 36%, M 30%, H 29%
Throwbacks occurrence	66%	67%
Average time to throwback peaks	6% in 6 days	8% in 6 days
Average time to throwback ends	12 days	12 days
Average rise for patterns with throwbacks	46%	29%
Average rise for patterns without throwbacks	50%	37%
Percentage price resumes trend	82%	69%
Performance with breakout day gap	54%	24%
Performance without breakout day gap	45%	34%
Average gap size	$0.36	$0.39

After a throwback completes, price resumes rising most of the time.

Gaps. A gap that occurs during the breakout tends to push price higher but only in bull markets. In bear markets, the results reverse with complex bottoms without gaps showing better performance.

Table 40.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones. I measured the height of patterns from the highest peak to the lowest valley and divided by their respective breakout prices. Values above the median saw better performance that did those below the median.

Width. Width is not as good a predictor of future performance as height. The table shows that the results vary depending on whether it's a bull or bear market. To determine whether a pattern was narrow or wide, I compared it to the median width.

Height and width combinations. The performance of the combinations of height and width tracks the results found earlier. By that, I mean bull market patterns that performed best when tall and best when wide saw the best performance if the complex bottom was both tall and wide. Similarly, bear market patterns show the best performance if they are both tall and narrow, matching their individual traits of height and width.

You'll want to avoid trading short/narrow patterns in bull markets and short/wide ones in bear markets.

Table 40.6 shows volume-related statistics.

Volume trend. I found volume trends downward using linear regression on volume from the leftmost shoulder to the rightmost one.

Table 40.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	49%	36%
Short pattern performance	45%	27%
Median height as a percentage of breakout price	15.3%	23.1%
Narrow pattern performance	44%	35%
Wide pattern performance	50%	28%
Median width	62 days	63 days
Short and narrow performance	43%	30%
Short and wide performance	47%	23%
Tall and wide performance	51%	31%
Tall and narrow performance	46%	43%

Table 40.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	65% down	64% down
Rising volume trend performance	53%	37%
Falling volume trend performance	44%	29%
Heavy breakout volume performance	48%	33%
Light breakout volume performance	45%	29%

Rising/Falling volume. Patterns with a rising volume trend outperform those with a falling volume trend.

Breakout day volume. Both bull and bear markets show better performance when the breakout occurs on heavy volume (above the 30-day average).

I don't show **Table 40.7** because I haven't taught my computer how to estimate it for this chart pattern.

Table 40.8 shows the performance over three decades. I don't include bear markets because they happened in the 2000s only.

Performance over time. Performance of the complex bottom has improved over the decades. This is one of the few times I've seen a consistent performance improvement over the years.

Failures over time. Failures peaked in the 2000s, but I don't know why that is.

Table 40.9 shows busted pattern performance.

Busted patterns count. Few complex bottoms bust, which is good news if you buy long and expect price to continue rising.

Table 40.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	41%
2000s	46%
2010s	61%
Performance (above), Failures (below)	
1990s	5%
2000s	9%
2010s	7%

Table 40.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	112 or 12%	43 or 16%
Single bust count	64 or 57%	34 or 79%
Double bust count	31 or 28%	8 or 19%
Triple+ bust count	17 or 15%	1 or 2%
Performance for all busted patterns	–14%	–21%
Single busted performance	–21%	–24%
Non-busted performance (complex head-and-shoulders tops)	–17%	–23%

Busted occurrence. I sorted busted patterns into their types: single, double, and more than two busts (triple+). Most of the patterns will single bust with double busts placing second. That may sound obvious and logical, but I've seen a number of chart patterns with triple+ placing second.

Busted and non-busted performance. I compare the performance of busted patterns with complex head-and-shoulders *tops* as a proxy for non-busted complex bottoms. Single busted patterns outperform the others I tested. The catch to this is that you

have to be lucky enough to trade a single busted pattern and not some other type (double or triple+).

Trading Tactics

Table 40.10 shows trading tactics.

Measure rule, targets. The measure rule sets a target for price to reach and is best explained by an example. Figure 41.5 shows a complex head-and-shoulders bottom on the weekly scale with the head reaching a low of 13.50. Directly above that point, the neckline has a value of 18.63. The difference, 5.13, is the formation height. Add the difference to the breakout price (17) to get the target (22.13).

Table 40.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the lowest low reached in the head(s) from the neckline, measured vertically. Add the result to the breakout price to get a target. The lower portion of the table shows how often the measure rule works.
Trade inner head-and-shoulders	Trade the inner head-and-shoulders bottom. That approach will allow you to get in at a good price. See the chapter on head-and-shoulders bottoms for specific trading hints.
Stop location	Stocks sometimes decline to the lowest of the right shoulders then turn around. Look for support areas near the shoulders. Place a stop-loss order 15 cents below the lowest right shoulder or head.
Watch for throwback	Buy or add to the position during a throwback. Wait for price to finish falling before placing the trade as price sometimes throws back and continues moving down.

Description	Bull Market	Bear Market
Percentage reaching half height target	88%	72%
Percentage reaching full height target	71%	45%
Percentage reaching 2× height	50%	24%
Percentage reaching 3× height	38%	14%

The chart shows a complex head-and-shoulders bottom that forms after nearly a 2-year run-up in price. The formation marks a reversal of the 6-month retrace.

It took price just 2 weeks after the breakout to reach the target, but the stock was not done climbing. It moved sideways for almost a year before continuing higher. The stock reached a high of 39.38, nearly triple the head low of 13.50 and more than double the breakout price.

The bottom portion of the table shows how often price reaches a target using various heights. The prior example used the full height. In bull markets, that method works 71% of the time. For a closer target, divide the height in half and add it to the breakout price. That method works 88% of the time, on average.

For a check of the results, run it by Table 40.3. The height is 5.13, and let's assume the current price is 17, so the height as a percentage of the current price is 30%. Table 40.3 says that 51% of the patterns in bull markets will fail to see price rise more than 30%. That value helps put the anticipated rise into better perspective.

Trade inner head and shoulders. Since a head-and-shoulders chart pattern is part of the larger complex pattern, then trade the inner pattern. Buy when price pierces a down-sloping neckline or use the inner right shoulder high (the armpit) as the breakout price. Usually, this approach will get you in sooner and the signal is just as strong.

Stop location. Before you take a position in the stock, consider the stop-loss location. Many times the various shoulder troughs will act as support levels. Don't forget to change the potential loss into a percentage of the buy price (or anticipated breakout price). Many traders try to limit losses to 8%.

Watch for throwback. After an upward breakout, the stock will likely throw back to the neckline. Consider adding to your position or placing a long trade once price stops declining. You should wait for price to rebound on a throwback or else you could find yourself in a situation similar to that shown in Figure 40.2. Price throws back to the neckline and then continues down for over a week. Depending on when you bought the stock, you could have seen a near 10% price improvement if you had waited a few days.

Table 40.11 shows special features of the complex head-and-shoulders bottom.

Neckline slope. The best performance comes from patterns with down-sloping necklines. Draw a neckline atop the highs of the chart pattern. When the neckline slopes downward, a close above it signals a breakout and a valid head-and-shoulders pattern. It allows you to buy into the pattern at a lower price than waiting for price to climb above the highest high.

When the neckline tilts upward, the buy signal may never occur. Instead wait for price to close above the highest high between the nearest head and right shoulder.

Shoulder lows. I compared the lowest left shoulder low to the lowest right shoulder low. Performance improved only in bear markets when the left shoulder was below the right one.

Experience

I prefer to trade regular head-and-shoulders bottoms instead of the complex variety. Over the decades, I made only two trades in complex bottoms.

Table 40.11 Special Features

Description	Bull Market	Bear Market
Neckline slopes up, performance	45%	29%
Neckline slopes down, performance	49%	33%
Left shoulder above right, performance	47%	29%
Left shoulder below right, performance	47%	33%

Big Lots

The first trade was in Big Lots (BIG) in 2004, shown in **Figure 40.5**.

After peaking in 2003, the stock began to slide and formed a complex head-and-shoulders bottom during the summer of 2004. I show that with two left shoulders (S), a central head (H), and two right shoulders (S). The neckline sloped downward, as the chart shows.

The breakout was upward (at A) and looked normal, but breakout volume was weak. I considered placing a stop below the right shoulder low but felt that location was too close (the first S in September).

I scored the chart pattern using my scoring system (see *Trading Classic Chart Patterns,* Wiley, 2002), and it was –2. Scores below 0 tend to underperform.

- Lesson: If the scoring system has a score of 0 or below, either decide to abandon the trade or monitor it carefully.

The stock climbed to B and threw back to the breakout price at C. On that day I bought and made an entry near the day's low. Yippee!

I used lots of technical evidence to support an upward move in the coming days, including hope that this would bust a downward breakout from a large symmetrical triangle I saw on the weekly scale. I threw in some indicators, too (MACD, Bollinger bands, Fibonacci retraces and extensions, all of which I no longer use). The busted downward breakout from the weekly triangle didn't happen.

Price in the complex head-and-shoulders bottom continued lower. I sold at D and lost 7%.

Figure 40.5 This trade in a triple busted complex head-and-shoulders bottom lost money because price continued down after a throwback.

At E, the stock busted the upward breakout when it closed below the head low. The stock didn't drop more than 10% before reversing and closing above the top of the chart pattern. That happened at F, and it busted the head-and-shoulders for the second time. The stock continued to move sideways until May 2006, busting the pattern for the third time along the way.

This entry was bad timing on the throwback.

- Lesson: A good way to prevent buying too early after a throwback (when price is still dropping) is to wait for price to break out

upward again.

That means waiting for price to rise back above a down-sloping neckline or above the right armpit high (when the neckline slopes upward). Had I done that, I would have entered the stock when price was rising (at G), not falling. Because the stock wobbled sideways, I don't think it would have changed a losing trade into a winning one, but at least I would have corrected a bad entry.

Chemtura

The second trade was in Chemtura (CEM) in 2008. I bought in after the second right shoulder was in place but well before confirmation. I put a stop below the right shoulder. The stock spiked down 2 days later and hit my stop. I lost 6% on the trade.

Six percent in 2 days: I really dislike losing money so fast. The complex bottom never confirmed, and the stock dropped from my sale price of 6.96 to 9 cents before I stopped following the stock.

- Lesson: Wait for confirmation. I didn't and suffered a loss.

Sample Trade

When the weather is nice, I like to take my bicycle out for a spin and give the automobile drivers something to aim for. On one of my bike trips I met Melody. After I told her what I did for a living, she confessed that she was a nightclub dancer and made oodles in tips. I was unsure whether I bought her story, but she looked pretty enough (wearing a bike helmet and sun glasses, who can tell?).

Anyway, **Figure 40.6** shows a trade she made in the stock. “I liked the setup because a trendline drawn from the high in early October 1993 to just after the head marked a turning point. That is where price moved up enough to pierce the trendline.”

Melody knew that price usually retests the low before beginning an extended move upward, so she followed the stock and watched it loop around and dip to 14. Then she glanced sideways and noticed the other dip at 14.38. “That's when I found the (inner) head-and-shoulders bottom.”

Figure 40.6 Complex head-and-shoulders bottom on a weekly scale. For a price target compute the pattern's height from the head low to the neckline (vertically) and add the difference to the breakout price. The right shoulders often offer support during future declines.

A neckline connecting the rises between the two shoulders was impossibly steep; there was no way she could apply the traditional measure rule to determine a target price (because price had not closed above the neckline), so she decided to buy into the stock when price closed above the right shoulder high (armpit).

She bought in late May 1994 and received a fill at 17.50.

“I wondered if another pair of shoulders would appear. They did.” During late July, another shoulder appeared at 15.75, mirroring the one in mid-December 1993 (the outer pair of shoulders).

Soon, price began moving up. It climbed above the breakout price in mid-August. Now she was able to apply the measure rule for the complex bottom and found the target was 22.13.

“I didn't need the money immediately, so I held onto the shares as price climbed. I thought the stock had enough momentum to reach

the old high at 29.25, so that became my target. As long as I didn't lose money, I was happy to hold onto the stock."

She saw the stock building a base between 21 and 26 and wondered what to make of it. A downward breakout was a real possibility, so she raised her stop to 21, and at a price just below where the base was building.

In mid-June, just over a year after she placed the trade, price zoomed up and reached her sell target. The stock sold at 29, "which was fine with me because I needed the money for a down payment on a house."

I was so engrossed with her story and the way she told it that I didn't realize she had dismounted from her bicycle. She spoke of going back to her place, of making some new chart patterns, and then playfully thrust her hips into mine.

I fell off my bicycle.

41
Head-and-Shoulders Tops

RESULTS SNAPSHOT

Appearance: A three-peak pattern with the center peak taller than the others, resembling a person's head and shoulders.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	9 out of 36	4 out of 19
Breakeven failure rate	19%	5%
Average decline	16%	24%
Volume trend	Downward	Downward
Pullbacks	68%	67%
Percentage meeting price target	51%	55%
See also	Head-and-shoulders tops, complex, triple top	

Of all the chart patterns in this book, the head-and-shoulders top is perhaps the most popular. In bear markets, performance shines with just 5% of the patterns failing to drop more than 5% after the breakout, and the average decline measures a large 24%, above the

22% average for all chart pattern types. The performance rank reflects this, too. Traders not versed in chart patterns can guess what a head-and-shoulders top looks like and get it right.

Tour

Figure 41.1 shows an example of a head-and-shoulders top. The three bumps are clearly visible, with the center bump being the highest of the three. The left shoulder usually appears after an extended uphill run. The entire pattern seems to stand alone when viewed in the context of a year's worth of daily price data. This stand-alone characteristic makes the head-and-shoulders top easily identified in a historical price series.

Typically, the highest volume occurs during the left shoulder, then the head, and then the right shoulder, in that order. The identification guidelines are flexible because volume characteristics vary from pattern to pattern.

A trendline drawn along the bottoms of the two valleys between the three peaks forms the neckline. The line may slope in any direction but slopes upward a bit more than downward.

Why do these chart patterns form? Pretend for a moment that you are a big spender and represent what is commonly called the *smart money*. You are searching for a stock to buy and believe that Toll Brothers (**Figure 41.2**) represents an intriguing situation. You review the fundamentals and everything looks good, so you start buying the stock in mid-July as price descends (before the rise to the left shoulder). Your buying halts the drop and the stock begins rising.

Soon you have acquired all the stock you want, so you sit back and wait. As expected, the company issues good news and the stock begins making its move. Other investors jump into the game and buy the stock, sending the price higher. As the stock rises above 10, you decide it is time to sell. After all, you have made 20% in about 2 weeks. Your selling causes the stock to pause and then begin a retrace of the prior action. This forms the right shoulder.

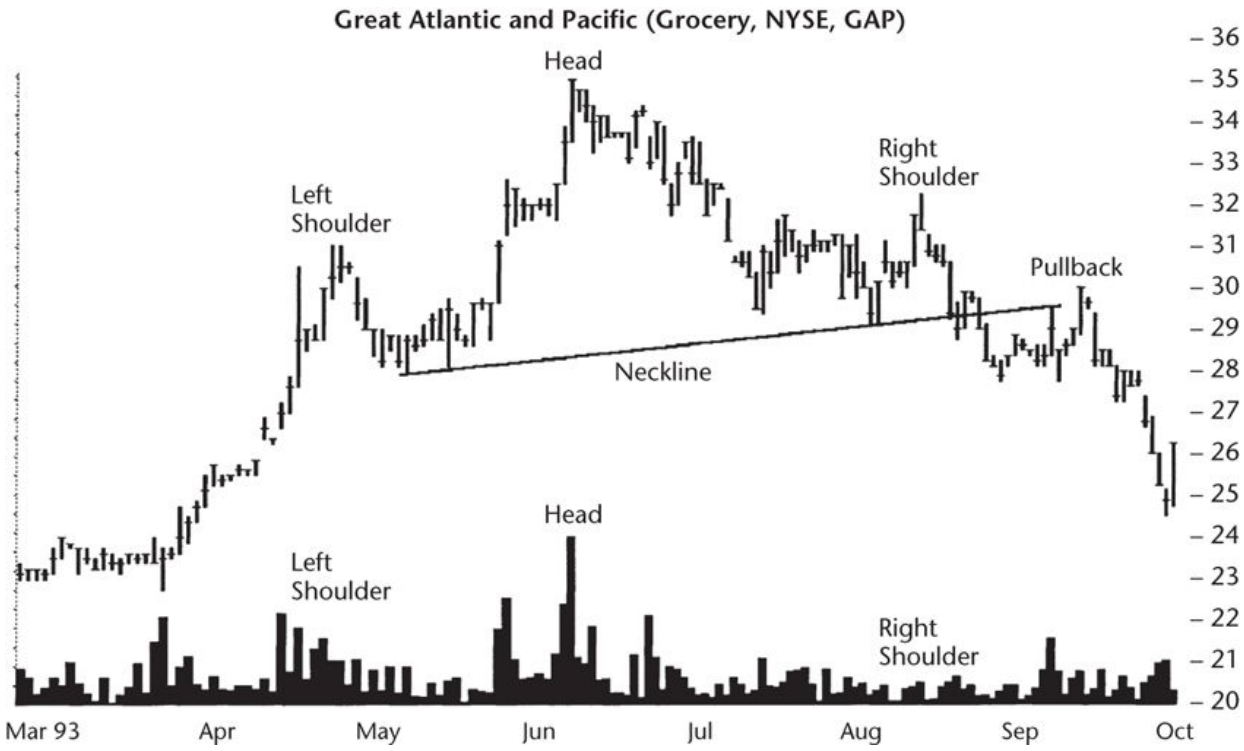


Figure 41.1 A head-and-shoulders top pattern where the center peak towers above the other two. A pullback to the neckline occurs frequently.

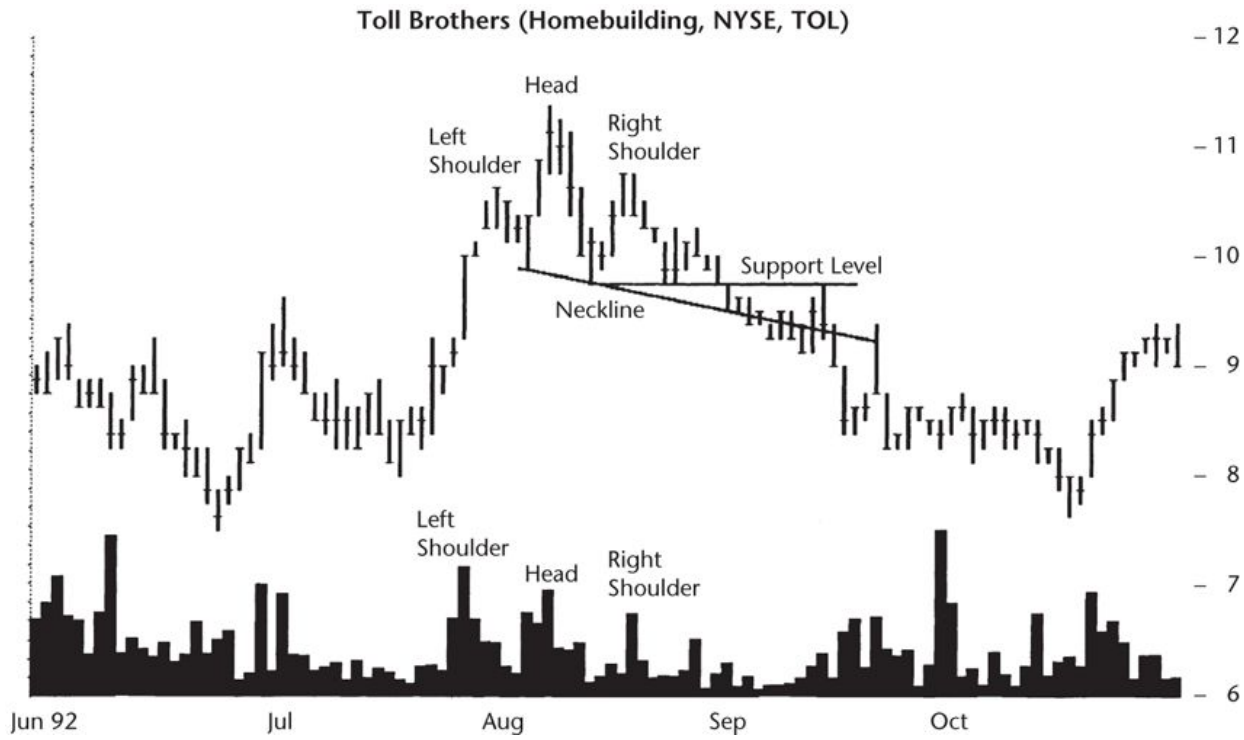


Figure 41.2 Volume pattern of this head-and-shoulders top obeys the general characteristics: highest on formation of the left shoulder and weakest on the right shoulder. The down-sloping neckline suggests an especially weak situation.

Sensing weakness in the stock, you stop selling and monitor the situation closely. Other momentum and buy-the-dip players, believing that this is a chance to get in on the ground floor of a further advance, buy the stock on the retrace. The decline halts, and the stock begins rising again.

As it rises, additional momentum players make a bid for the stock or buy it outright. Once the stock gets above 10, you begin selling it again, not heavily at first because you have a large number of shares to dump. Still, the market players notice your selling, and the stock climbs just above 11 before heading back down. This buying and selling forms the head of a head-and-shoulders pattern on the chart.

You dump your remaining shares as the stock begins tumbling. Volume rises as other players sell their shares to unsuspecting buyers. The stock continues moving down and slides back below 10. Believing the stock oversold, demand picks up and sends the price moving up again for the last time, forming the right shoulder.

You watch the action from the sidelines, content with the profit you have made. The stock climbs to 10.75 on the right shoulder. Lacking support, the rise falters on weak volume and the stock turns down. Investors versed in technical analysis see the head-and-shoulders top for what it is: a bearish reversal. They quietly take their profits and sell the stock. Others initiate short sales by selling high and hoping price falls.

The stock moves down to the support level where it declined the last time. The stock pauses there for a week and makes a feeble effort to rise again. When the attempt falters, the stock moves down and pierces the neckline. Volume picks up, and the stock tumbles. Eventually, price declines back to where it began, just under 8.

Identification Guidelines

Are there certain guidelines that make identifying a head-and-shoulders top easy? Yes, and **Table 41.1** lists them. Remember that the identification guidelines are suggestions, not hard rules, so be flexible. Use the figures in this chapter as guidance on what to look for.

Appearance. A head-and-shoulders top pattern can appear in a wide variety of shapes. Consider **Figure 41.3**. Shown is a head-and-shoulders top, but there are four shoulders and only one head. When a pattern appears with more than the standard two shoulders and one centrally located head, it is called a complex head-and-shoulders top. Complex patterns for both tops and bottoms have their own chapters, but because a complex head-and-shoulders top also contains a (simple) head-and-shoulders top, many appear in this chapter's statistics.

The head-and-shoulders top usually appears at the end of a long uptrend. Sometimes, when the prior uptrend is short, the reversal takes price down to where it started the climb (see Figure 41.2, the launch price at about 8.00). At other times, the decline is usually short (up to 3 months) or intermediate (3 to 6 months), or can signal a change in the primary bullish trend.

Table 41.1 Identification Guidelines

Characteristic	Discussion
Appearance	After an upward price trend, the chart pattern appears as three bumps; the center one is the tallest, resembling a bust. Be wary of patterns with uneven shoulders or long necks.
Symmetry	The two shoulders should appear at about the same price. Distance from the shoulders to the head is approximately the same. There can be wide variation in the pattern's appearance, but symmetry is usually a good clue to the validity of the pattern.
Volume	Highest on the left shoulder, followed by the head. The right shoulder shows the lowest volume of the three peaks. Don't discard a pattern because of an unusual volume pattern.
Neckline	Connects the lows of the two troughs (armpits) between the three peaks. The line can slope up or down. Often used as a trigger (to buy or sell) once price closes below the line.
Breakout direction	Downward. For up-sloping necklines, use a close below the line. For down-sloping necklines, use a close below the right armpit as the breakout.
Confirmation	Price confirms the pattern after a downward breakout. If price breaks out upward, then you don't have a valid head-and-shoulders top.

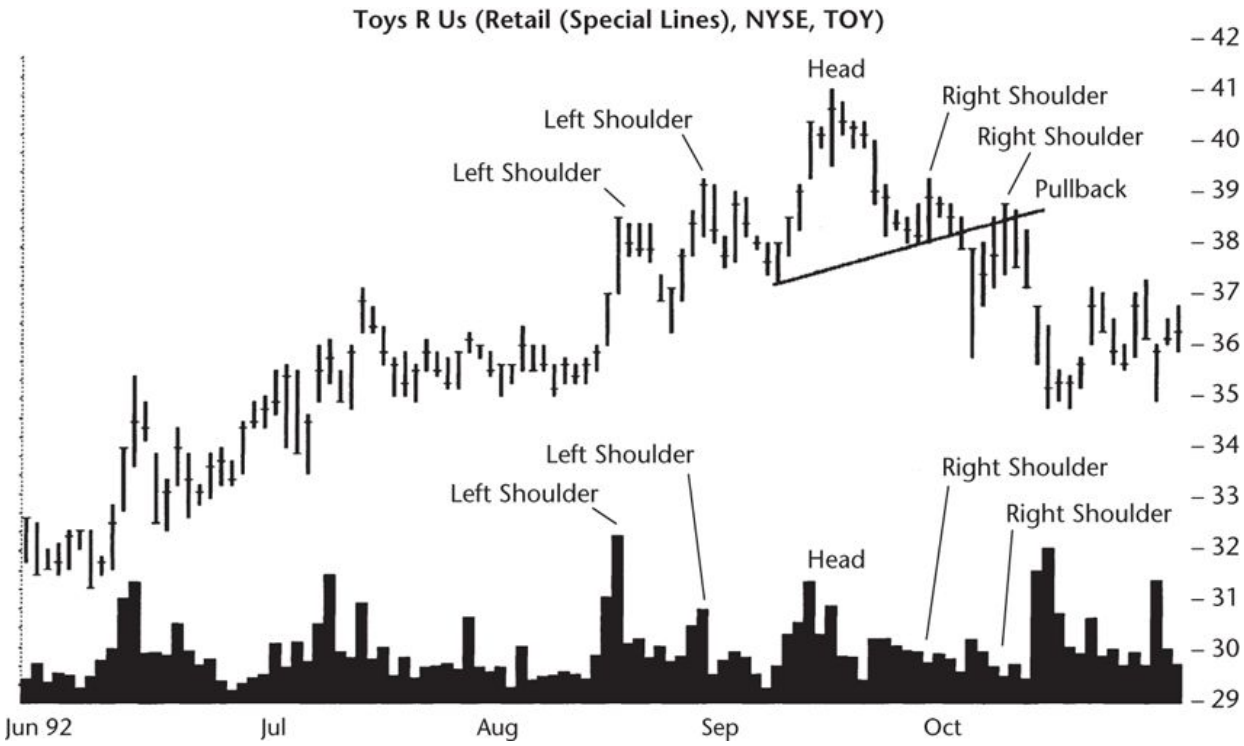


Figure 41.3 A complex head-and-shoulders top pattern. The chart shows the wide variation that a head-and-shoulders formation can take.

Look for two shoulders that peak below the top of a central peak. That central peak is the head.

Symmetry. Even though the pattern shown in Figure 41.3 is odd because of the extra shoulders, it does appear symmetrical. The two left shoulders are at about the same price level as the corresponding two right shoulders. Each of the shoulders is approximately the same distance from the other and from its mirror opposite. In the chart pattern, the head is centrally located. The symmetrical appearance of a head-and-shoulders top is one of its key identification characteristics and helps separate any three bumps from a valid head-and-shoulders chart pattern.

Let's ignore the two outer shoulders and concentrate on the two inner shoulders and the head. Those three make up the head-and-shoulders top chart pattern.

Volume. Volume obeys the following general characteristic: It is higher on the left shoulder than on the head, and higher on the head

than on the right shoulder. The volume pattern changes somewhat since the left shoulder has diminished volume compared to the head. Even so, the volume on the left shoulder is still above the right shoulder. Don't let an unusual volume pattern persuade you to ignore a head-and-shoulders top. Volume isn't important to performance. I'll prove that in Table 41.6.

Neckline. The neckline, as shown in Figure 41.3, connects the two troughs between the three inner peaks (the armpits). The neckline slopes upward but need not do so (contrast with Figure 41.2). The neckline serves as confirmation. Once price closes below the neckline, it turns squiggles on a price chart into a valid chart pattern.

Breakout direction. The breakout is always downward. A breakout occurs when price closes below an up-sloping neckline or below the right armpit (the lowest low between the head and right shoulder) if the neckline slopes downward. The reason for the armpit rule is to avoid situations like that shown in Figure 41.2. The neckline slopes downward, and if it were steep enough, you might not get a breakout. (The figure *does* show a breakout, but it's well below the armpit signal, shown here as Support Level.)

Confirmation. Price must break out downward, either by closing below the neckline or below the right armpit, to confirm the head-and-shoulders top as a valid chart pattern.

Focus on Failures

Figure 41.4 shows an example of a head-and-shoulders top failure. This well-formed pattern has a head centrally located between two shoulders. The left and right shoulders are at the same price level, 29.13. Volume is highest on the left shoulder and lowest on the right, as expected.

Why does price fail to pierce the neckline at point A and head down? The answer is not clear. The formation is perfect except that price fails to drop. This example acts as a consolidation or continuation of the upward trend.

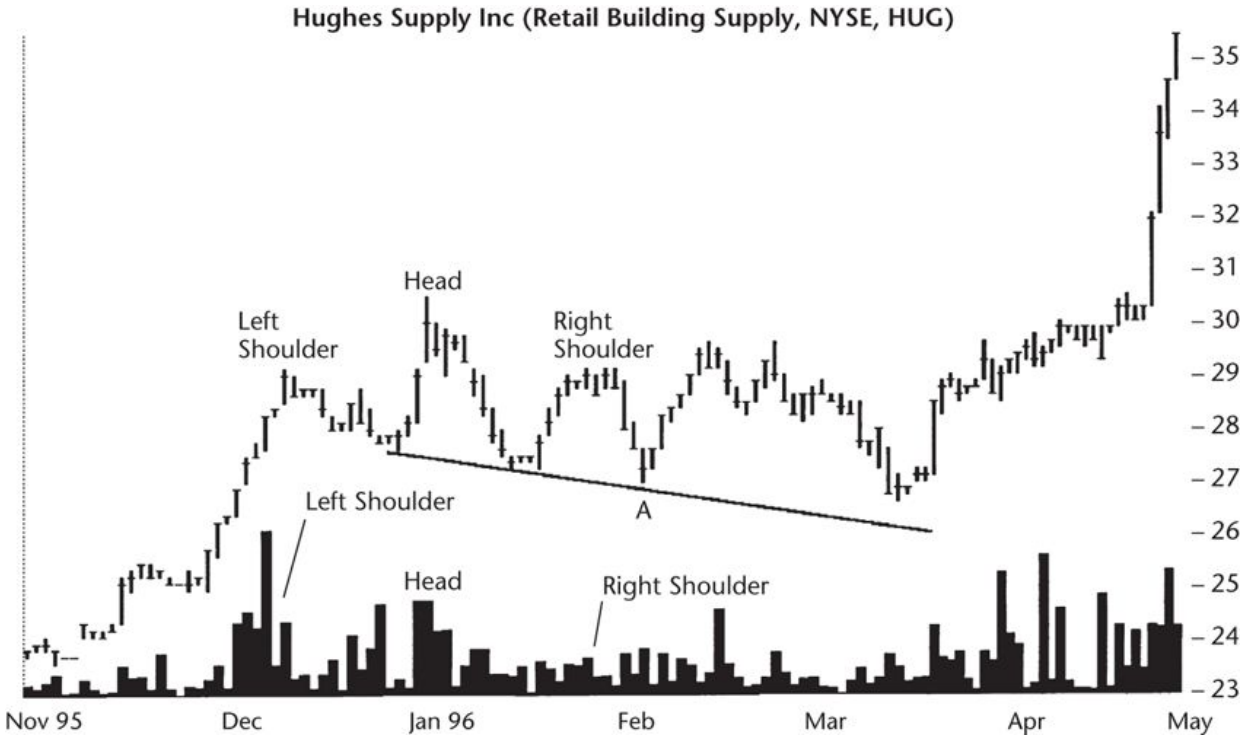


Figure 41.4 A rare head-and-shoulders consolidation. The pattern fails to continue down after reaching point A. Symmetry and volume patterns offer no clue to the eventual failure to confirm as a valid head-and-shoulders top.

Not shown in the figure, the prior two chart patterns were descending triangles. Both had upward breakouts, and both signaled a bullish uptrend. The two patterns were clues to the strength of the rise, but one could also argue that the appearance of a head-and-shoulders pattern might signal an end to the extended rise.

It did not.

This chart also shows an example of a down-sloping neckline that did not signal a trade entry this time (which is a good thing in this case). Using a close below the right armpit would serve as a better entry signal in most cases. The right armpit is at 9.09, and point A *closes* at 9.09. Technically that's not a close *below* the armpit, and it's certainly not below the neckline, so it doesn't trigger a breakout. However, the low in March has a closing price at 8.97, which is below the right armpit, so the breakout happens there. However, price does rise above the right shoulder between A and the March low, so I'd probably throw out the pattern because of that rise anyway.

In bull markets, you'll see price fail to drop more than 5% below the breakout price 19% of the time. I'll discuss failure rates in Table 41.3.

Statistics

Table 41.2 shows general statistics.

Number found. Over several decades of cataloging chart patterns, I found 3,577 head-and-shoulder tops in 1,067 stocks, with the first pattern hiding in July 1991 and the most recent in October 2018. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. A head-and-shoulders top is a reversal by definition. Price enters the pattern from the bottom and breaks out downward. Thus, price reverses the uptrend.

Average decline. In bear markets, this pattern does well, with declines averaging 23.7%. That's better than the average decline of 22.2% for bearish chart patterns of all types. Bull markets are slightly ahead of the overall average, too, 16.1% (head-and-shoulders) versus 14.9% (for all pattern types). You'll notice I rounded off the numbers in the table, so don't be alarmed.

Table 41.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,847	730
Reversal (R), continuation (C) occurrence	100% R	100% R
Average decline	–16%	–24%
Standard & Poor's 500 change	–2%	–11%
Days to ultimate low	58	43
How many change trend?	29%	52%

Standard & Poor's 500 change. The decline in the general market helped pull down stocks showing head-and-shoulders tops. That's especially effective in bear markets, where the S&P dropped 11%. However, that average drop is less than half what the chart pattern did over the same measurement periods (breakout to ultimate low).

Days to ultimate low. It takes about 2 months for price to reach the ultimate low. Notice that the decline is farther (price) and shorter (time) in bear markets than in bull markets. Thus, the decline must be steeper in bear markets. In fact, the drop happens twice as fast as it rises.

How many change trend? This item is a count of how many patterns see price move more than 20% after the breakout. I like to see values above 50%, but that's for upward breakouts. Even though price drops in bear markets, we still see 52% making such large drops. That's terrific.

Table 41.3 shows failure rates. The best performance is from head-and-shoulders tops in bear markets because they have the lowest failure rates. For example, 5% of the patterns fail to see price drop more than 5%. Another example: Nearly half (48%) fail to see price drop more than 20% in bear markets. That performance is even worse in bull markets when 71% of them fail to drop more than 20%.

Notice how failure rates climb for small changes in the maximum price decline. The rate triples and then almost doubles as the decline moves from 5% to 15% (bear markets). The numbers should serve as a warning that as reliable as a head-and-shoulders pattern is, not all patterns perform equally well. Monitor your trade and use stops to limit losses. As price drops, trail the stop lower if you are so inclined.

Table 41.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	536 or 19%	38 or 5%
10	617 or 40%	96 or 18%
15	493 or 58%	109 or 33%
20	362 or 71%	110 or 48%
25	239 or 79%	82 or 60%
30	184 or 85%	78 or 70%
35	148 or 91%	59 or 78%
50	204 or 98%	116 or 94%
75	63 or 100%	42 or 100%
Over 75	1 or 100%	0 or 100%

Another way to use Table 41.3 is with price prediction. Suppose the measure rule (see Trading Tactics) suggests a decline to 8 from the breakout of 10. That is a 20% decline. How many head-and-shoulders tops in bull markets will fail to see price drop more than 20%? Answer: 71%. This finding suggests the measure rule prediction is unlikely to be met. Set a closer price target. Price may still drop that far or even farther, but the odds are against it.

Table 41.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is downward all of the time. If price closes above the top of the head-and-shoulders top, then you don't have a valid head-and-shoulders pattern.

Yearly position, performance. The best performing patterns occur when the breakout is in the middle of the yearly trading range. However, the performance differences are slight so they might not be statistically significant.

Pullbacks. Pullbacks occur about two-thirds of the time. It takes less than 2 weeks after the breakout for price to complete the return trip back to the breakout price. When a pullback does occur, performance suffers, and quite dramatically. For example, in bear markets, patterns with pullbacks drop 22% after the breakout. Without pullbacks, the drop measures 28%.

After the pullback completes, price resumes the downward move 58% of the time. To flip this around, it means 42% of the time (of those patterns having a pullback), the ultimate low appears as price drops before beginning its return to the breakout price.

Table 41.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –16%, M –17%, H –15%	L –23%, M –24%, H –24%
Pullback occurrence	68%	67%
Average time to pullback bottoms	–6% in 6 days	–10% in 6 days
Average time to pullback ends	12 days	12 days
Average decline for patterns with pullbacks	–15%	–22%
Average decline for patterns without pullbacks	–19%	–28%
Percentage price resumes trend	58%	58%
Performance with breakout day gap	–16%	–22%
Performance without breakout day gap	–16%	–24%
Average gap size	$0.59	$0.78

Gaps. In bear markets, on average, you see the best performance (to the ultimate low) if price does *not* gap on the breakout day. That's contrary to technical analysis lore, which says heavy breakout volume is important to performance. In this case, and in many other chart pattern examples, volume is not as important as people think.

Table 41.5 shows pattern size statistics.

Height. Do tall patterns perform better than short ones? Yes. The widest difference is in bull markets where price drops 19% for tall patterns but just 13% for short ones. I measured height from the

highest high to the lowest low in the pattern (starting from the left shoulder peak to the right shoulder peak) and then divided by the breakout price. Those patterns with values higher than the median shown in the table were tall.

Width. Width is less reliable as a performance indicator than height. I used the median time from shoulder to shoulder to gauge width. As the table shows, there's no consistent trend from bull to bear markets (wide works best in bull markets, but narrow patterns outperform in bear markets).

Height and width combinations. The results say that tall patterns outperform. Avoid short ones.

Table 41.6 shows volume-related statistics.

Volume trend, breakout performance. Volume trends downward between the two shoulders most of the time, but if you see a head-and-shoulders with an upward volume trend, it's fine. As the performance statistics show, volume has little to do with performance.

Table 41.7 is not shown because the nature of the pattern doesn't lend itself to finding stop locations automatically.

Table 41.8 shows the performance over three decades

Table 41.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–19%	–24%
Short pattern performance	–13%	–23%
Median height as a percentage of breakout price	12.5%	18.8%
Narrow pattern performance	–15%	–24%
Wide pattern performance	–17%	–23%
Median width	36 days	37 days
Short and narrow performance	–13%	–23%
Short and wide performance	–14%	–23%
Tall and wide performance	–19%	–24%
Tall and narrow performance	–19%	–25%

Table 41.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	61% down	58% down
Rising volume trend performance	–16%	–24%
Falling volume trend performance	–16%	–23%
Heavy breakout volume performance	–16%	–23%
Light breakout volume performance	–16%	–24%

Table 41.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–20%
2000s	–14%
2010s	–15%
Performance (above), Failures (below)	
1990s	10%
2000s	23%
2010s	23%

Table 41.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	899 or 32%	72 or 10%
Single bust count	600 or 67%	30 or 42%
Double bust count	30 or 3%	4 or 6%
Triple+ bust count	269 or 30%	38 or 53%
Performance for all busted patterns	35%	16%
Single busted performance	67%	34%
Non-busted performance (head-and-shoulder bottoms)	45%	28%

Performance over time. Performance was best in the 1990s and about even performance since then.

Failures over time. Failures have increased since the 1990s, as the table shows. I think that the increase in failures mirrors the performance drop of the pattern since the 1990s.

Table 41.9 show busted pattern performance.

Busted patterns count. The table shows how many patterns bust. In bear markets, few do, but bull markets show triple the bear market number. It means that if you expect a large decline (more than 10%) after a downward breakout, you'll be wrong about a third of the time in bull markets.

Busted occurrence. Sorting the busted patterns by their type, we find that single busts happen most often in bull markets, but triple (or more: triple+) busts happen more often in bear markets. That's probably incorrect because the sample size is so small (38 patterns for triple busts, 30 for single, and 4 for double).

Busted and non-busted performance. I used head-and-shoulders *bottoms* as the proxy for a busted top pattern. Single busted patterns outperformed the other two varieties. The numbers are high enough that you'll want to trade a busted head-and-shoulders top, but only in bull markets. And with 67% of them single busts, there's a good chance that you'll be trading a single busted pattern, too.

Trading Tactics

Table 41.10 shows trading tactics.

Measure rule, targets. Figure 41.5 shows an example of the measure rule as it applies to a head-and-shoulders top. If you ignore the backward volume pattern, the formation looks fine. Each of the three bumps appears rounded, and the overall chart pattern is symmetrical. This is how a head-and-shoulders top should look.

Table 41.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the value of the neckline from the highest high reached in the head, measured vertically. Subtract the result from the breakout price. If the neckline slopes downward, use a close below the right armpit as the breakout price. The result is the target price. The bottom portion of the table shows how often various heights work in the measure rule.
Wait for confirmation	Wait for price to confirm the pattern by closing below the neckline or right armpit.
Busted pattern	A single busted head-and-shoulders top can lead to a meaningful rise. See the discussion for Table 41.9 for guidance.

Description	Bull Market	Bear Market
Percentage reaching half height target	77%	80%
Percentage reaching full height target	51%	55%
Percentage reaching 2× height	25%	29%
Percentage reaching 3× height	12%	15%

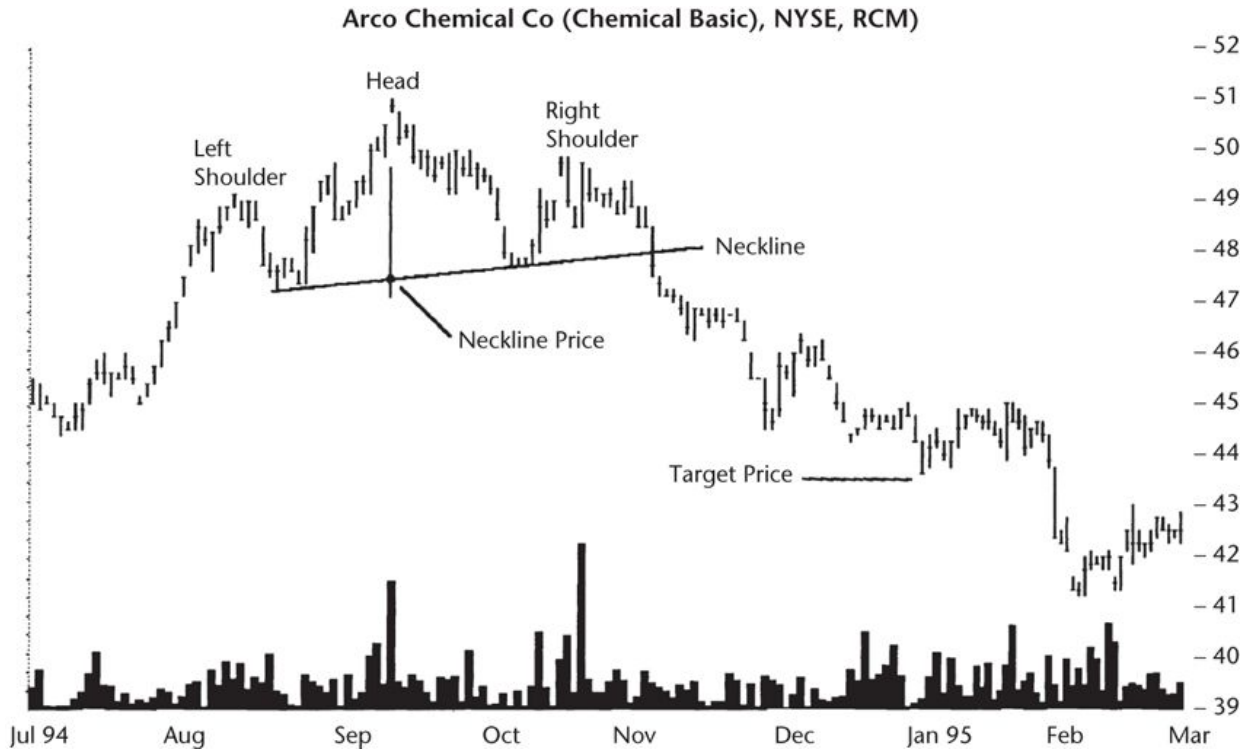


Figure 41.5 The measure rule as it applies to a head-and-shoulders top. Calculate the formation height by subtracting the neckline price from the highest high, measured vertically. Subtract the result from the breakout price. The result is the target price.

The measure rule uses the formation height as a basis for computing a target price. Use the target price as a gauge to determine how far price might drop.

Subtract the high price at the top of the head from the neckline, measuring vertically down until it intersects the neckline. The result gives the pattern's height. Subtract the height from the breakout price to get a target.

In the figure, the stock reaches a high price of 51 on 13 September. Directly below that point is the neckline price at about 47.38. The difference of 3.62 is the formation height.

The opening price the day after the breakout is 47.38 (same as in the neckline in this example), leaving a target price of 47.38-3.62 or 43.76. Price surpasses the target when it declines below the value in late December.

The bottom portion of the table shows how often various heights used in the computation work. In the above example, I used the pattern's full height. The table shows the full height works about half the time, so you might want to cut the height in half to boost the probability of success.

Once you know the target, use Table 41.3 to see if the predicted percentage decline is unrealistic for the number of failures which occur.

Wait for confirmation. Returning to Table 41.10, since anything can happen, it is always a good idea to wait for confirmation before selling an existing holding or shorting a new position. There is a chance price will not close below the breakout price before rising, so you'll want to wait for confirmation (a breakout).

Busted pattern. Single busted head-and-shoulders tops in bull markets can lead to large gains, so consider finding and trading one of those.

Experience

In the 1990s, I sold a number of times before the head-and-shoulders confirmed as a valid chart pattern (often before the right shoulder appeared). In four trades, the stocks saw additional gains, but most were small. In one case, however, I missed out on a 44% rise. In other words, just the potential threat of a head-and-shoulders top sent me scurrying for the exits, leaving behind profit.

Michaels Stores

In Michaels Stores (MIK, 1998), I sold too soon, but it was near the top, so it didn't matter too much.

Graco

In Graco (GGG, 2003), I bought an earnings flag that later formed a head-and-shoulders top. I sold when the pattern confirmed as a valid pattern, but the pattern triple busted and went on to gain 53%. *Ouch*.

Pinnacle West Capital Corp.

Pinnacle West Capital Corp. (PNW), **Figure 41.6**, shows an example of how I used to trade head-and-shoulders tops. In mid-October 2008, I bought the stock but don't have any notes for this entry except to say that I was averaging down. My spreadsheet of trades calls it a perfect entry, maybe because of the big downward price spike that I was able to bite into.

The stock was trading at the time in the 2007 to 2009 bear market, which ended at the March 2009 low. Four days after the stock bottomed in March, I bought more. Now *that* was a perfect entry.

- Lesson: Buy close to the end of a bear market to reap big rewards.

Anyway, fast-forward to the head-and-shoulders top, which I show as turns CDE. The stock closed below the bottom of the pattern at G (a little black nubbin below the horizontal confirmation line), staging a downward breakout.

The next day, F, I sold the stock. Here's my notebook of the sale: “28 April 2010. Sell reason: Head-and-shoulders top. This has moved horizontally since March and has pierced support with a closing black marubozu candle. That suggests more down move ahead. Since this is near my 39 price target, I'm selling the earliest and higher priced shares. This also matches Weinstein's sell technique of tightening up the top when price moves horizontally. This is a good opportunity to reduce my utility holdings for diversification because as a group, I'm too concentrated in them. CCI [commodity channel index] says sell yesterday both on a crossover of the two lines and it sank below the 0 line. I'm toying with selling the entire position but believe this has more upside to it. So, I'll hold onto the rest. Price has closed below the neckline of a HST [head-and-shoulders top], too.”

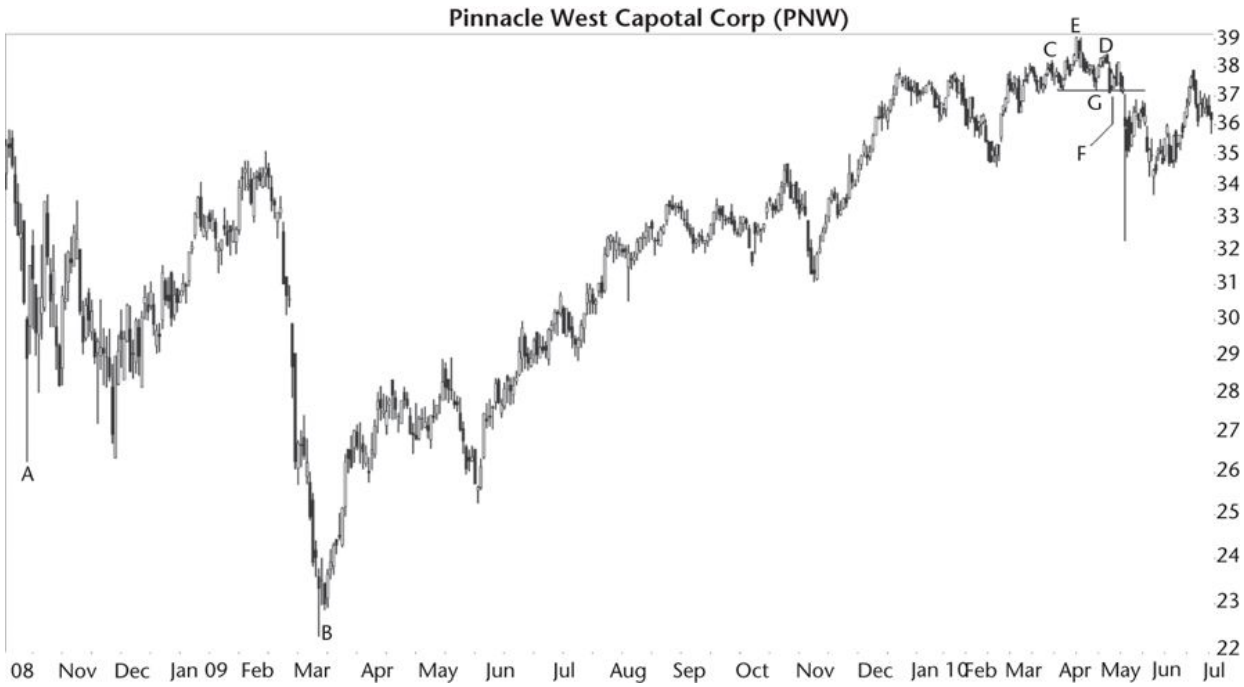


Figure 41.6 Bulkowski avoided watching profit disappear when this head-and-shoulders appeared.

I sold and made 41% on the trade, but that includes dividends that can be hefty from a utility stock. I sold at 37.26 and avoided the one-day plunge to 32.31, a drop 13% below my sale price. I was right to hang onto the remainder of my position, though. It peaked at 73.31 in January 2015 when it reached the ultimate high. That's double what I sold part of my position for.

- Lesson: Sometimes a bearish pattern in a bull market doesn't send price much lower.

iShares U.S. Basic Materials

Twice I traded busted head-and-shoulders tops with disappointing results. I jumped into iShares U.S. Basic Materials ETF (IYM), an exchange-traded fund, as it materialized out of the 2009 bear market and sold it almost a year later. If I had traded it perfectly, I would have made 33%. Instead I sold at the exact bottom of a retrace, the day before the fund started its long recovery. I made a small profit but missed out as the fund soared.

Don't you hate it when you sell before a security rises?

Brooks Automation

In the second case, Brooks Automation (BRKS) in 2005, the head-and-shoulders never confirmed as a valid pattern, so there was no downward breakout to bust. Even so, the stock closed above the top of the pattern and climbed 18%. I was stopped out along the way for a small gain but hoped the stock would deliver more.

Wex Inc.

In one trade, Wex Inc. (WEX) in 2019, I sold 4 months before the stock cratered by 70% during the Covid-19 pandemic. Thank goodness I sidestepped that drop.

- Lesson: Don't try to guess that a head-and-shoulders top will appear. Either it confirms or it doesn't, so don't exit prematurely.
- Lesson: If you do see a head-and-shoulders confirm, then assess how bad the drop will be. In my case, I sold quickly and avoided big losses, multiple times.
- Lesson: With busted head-and-shoulders tops, wait for a valid pattern to appear and then make a realistic assessment of how far price might rise. Then give it a try if it's worth the risk.

Sample Trade

Kelly is not just a housewife; she is much more than that. When her husband brings home the bacon, she not only fries it but cleans up the mess afterward. She balances the books and keeps tabs on their newborn.

She started investing years ago for fun. Now, it has become part of her daily life. In the spare moments between chores, she is often staring at the computer screen, reviewing the statistics of a prospective acquisition and letting her daughter bang on the keyboard.

Over the years she has been able to parlay their meager savings into a six-figure retirement portfolio. It was not always easy, and the mistakes were painful, but she viewed each failure as a learning experience.

The stock pictured in **Figure 41.7** posed an interesting situation for her. She was not keen on shorting a stock because her paper trades rarely worked. Still, she kept her eyes open and searched for good investment candidates. This one piqued her interest.

Figure 41.7 Head-and-shoulders top with steep neckline. There is no target price using the conventional measure rule because of the steep neckline.

The stock began its uphill run just before May 1993. It followed a gently sloping trendline upward until late January when it stumbled (not shown). The stock moved down to 26.50 before recovering, a drop of less than three points, but a sign of weakness. Kelly followed the stock closely, and when the head appeared, she made a note on her program that it might turn into a head-and-shoulders top. “It just had that certain feel.” She was correct.

The right shoulder plunge took price lower than she expected but quickly recovered to near the left shoulder high. She drew a neckline connecting point A with the steep plunge between the head and right shoulder, and thought the line was too steep to serve as an anchor for the measure rule. Instead, she used the height from the head to the right armpit projected downward from the armpit as the target. The target became 21.88. That target would take price back to the July 1993 level, and it seemed reasonable to her.

“Something bothered me about the stock, so I decided not to trade it.” When the doorbell rang, she left her daughter alone to go answer it.

Then the phone rang. It was her broker confirming that the stock sold short. Kelly ran to the computer to see her daughter standing on the chair, beating on the keyboard with a wide but guilty grin on her face. “I hoped it was gas, but it wasn't. My daughter had sold the stock short at 31. I couldn't believe it!”

After spending some anxious moments reviewing the trade, Kelly decided to maintain the position. The number of shorted shares was just 100, an amount she could live with. Price quickly retreated to the neckline (mid-April) where it found support. The stock bounced, and when it moved above the right shoulder low, she became concerned. After a few days, the stock leveled out and moved sideways (going into May). In case this turned out to be the beginning of a measured move up, she placed an order to cover her trade at 29. That would leave her with a small profit but still allow her to participate if the stock declined.

Two weeks later, she had an answer. The stock tumbled for 5 days in a row and then just as quickly recovered (early to mid-May), only this time it formed a lower high. The volatility was wearing her down, so she placed an order with her broker to cover her position when price reached the early May low. She was taken out when price descended to 22.75 on their way down to 20. After expenses, she made about 25% on the trade. Her daughter got a big kiss for her help.

42
Head-and-Shoulders Tops, Complex

RESULTS SNAPSHOT

Appearance: A head-and-shoulders formation with multiple heads, multiple shoulders, or both.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	7 out of 36	9 out of 19
Breakeven failure rate	18%	7%
Average decline	17%	23%
Volume trend	Downward	Downward
Pullbacks	66%	65%
Percentage meeting price target	47%	46%
See also	Head-and-shoulders tops, rounding tops, triple tops	

Except for appearance, there is not much difference between a normal head-and-shoulders top and a complex one. Add a dual head or a few extra shoulders to a regular pattern, and you have a complex head-and-shoulders top. Both patterns have a volume trend that generally

slopes downward between the shoulders. The left shoulders often have higher volume than the corresponding right ones.

The performance rank is good: seventh and ninth where 1 is best. The breakeven failure rate in bear markets is quite good, too, ranking fifth (not shown).

The measure rule doesn't work all that well, about half the time as the table shows (percentage meeting price target). I'll show how to improve those percentages in Trading Tactics.

Tour

There are two basic varieties of complex head-and-shoulders tops (which I'll refer to as complex tops). The first is illustrated in **Figure 42.1**. It has two heads but only one pair of shoulders. The complex top started in November after an extended bull run that began in November 1992 (not shown) and then melted back by late October, forming a base for the move up to the complex top.

The stock rebounded, creating the left shoulder. It paused at the 31–32 level by moving sideways, and then price spiked upward again in a sort of measured move up (a chart pattern) thrust. The measured move up stopped short of its target price by just over a dollar before the stock began retracing. The peak served as the first head.

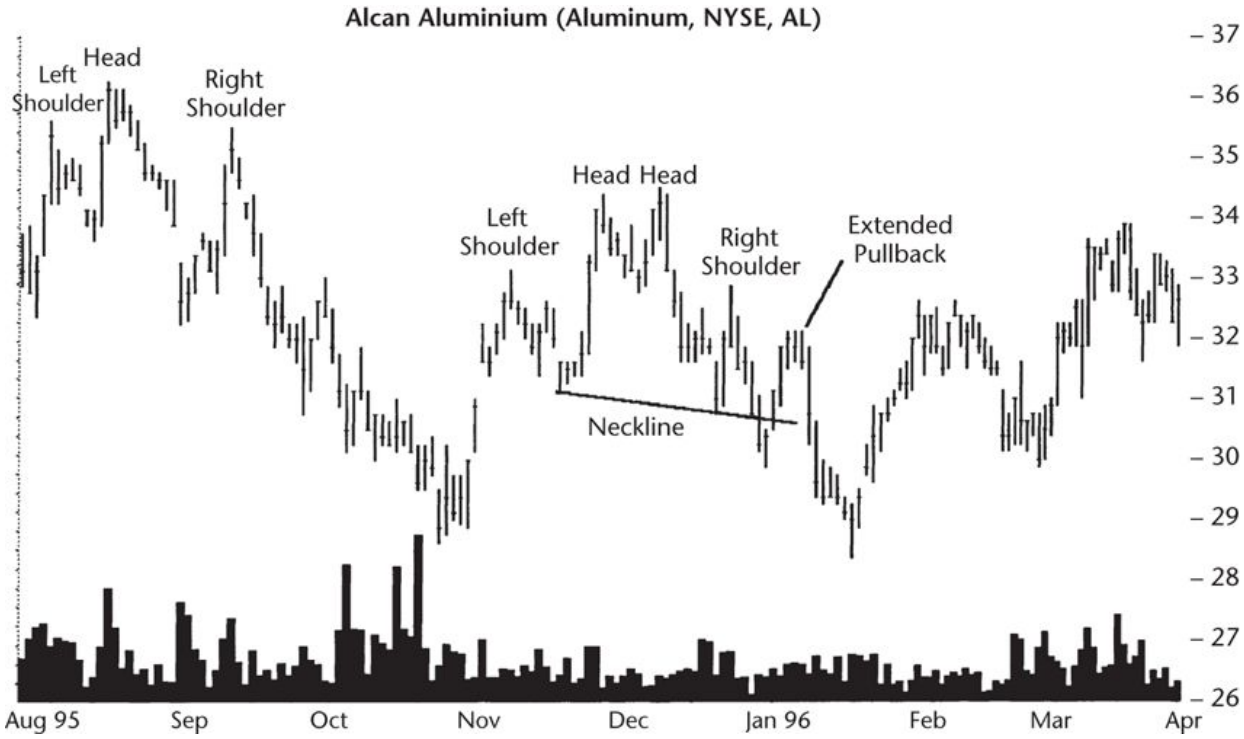


Figure 42.1 Complex head-and-shoulders top with dual heads. The stair-step pattern of a measured move up forms the left shoulder and head. The twin peaks take on the appearance of a horn top, and the resulting move down resembles another measured move, albeit stuttered. A simple head-and-shoulders appears in August.

After moving down a bit, the stock pushed upward and tagged the old high, then dropped. Another head appeared. Once price slipped from

the head, it found traction at the first shoulder valley and rebounded. The right shoulder took shape. After declining through the neckline, formed by a line joining the two shoulder valleys, price quickly pulled back and moved higher.

The stock turned away at the 32 resistance level and continued down in a straight-line run to 28.38. Notice that the stock bottomed near the price where it began (the launch price near 29, in late October).

Computing the slope of a line using linear regression of volume over the pattern (outermost shoulder to shoulder) indicated volume receded. Although it is difficult to tell from the figure, almost two out of every three (61%) complex head-and-shoulders tops show a receding volume trend.

Figure 42.2 shows a different type of complex head-and-shoulders top. Multiple shoulders with only one head is the more common of the two varieties. Pictured is the type of technical pattern that rips the heart out of novice investors.

Imagine someone buying this stock in October, just before the rise began. Price quickly climbed from a low of about 13 to a high of 27.88, a doubling of price in a little over 3 months. On the way up, our novice investor thought that picking stocks was an easy game; his selections were turning to gold.

The first shoulder formed when price touched 27.88 and retreated to a low of 22. The decline undoubtedly upset our investor pal. He promised that he would sell the stock once it returned to its old high.

Figure 42.2 Typical complex head-and-shoulders reversal. Multiple shoulders with a single head in a rather flat formation round out the pattern. The volume pattern emphasizes that volume is usually higher on the left side of the complex top than on the right.

In early January, price zoomed up and made a smaller peak at 27.50. Since the rise was so steep, our intrepid investor thought, *Why sell the stock when it is going up?* He's right. Price retraced a bit, moved higher, and formed the head at a price of 28.63, a higher high. Yippee!

Once the head completed, things start going wrong for our buddy. He was swayed by glowing rumors of the stock moving up to 35 or 40 within a year.

At the top, price rounded over and started down. It stopped midway between the valleys of the two left shoulders before making one final attempt at a new high. Up to this point, there were several opportunities to sell the stock at a good price. Did our novice investor take them? No. Always optimistic that price would ultimately break out and reach higher ground, he did not see the budding complex head-and-shoulders for what it was: a warning.

When price dropped below the neckline, our novice investor had just 2 days before things really got ugly. On the third day the stock closed at 23, near the low for the day. Price quickly unraveled and ultimately reached a low of 15, just a few dollars above the purchase price. Our investor threw in the towel and sold the stock. Of course, this was near the low, and the stock ultimately climbed to 30 a year later.

Identification Guidelines

How can our novice investor recognize the bearish reversal? **Table 42.1** outlines identification tips for complex head-and-shoulders tops.

Appearance. Consider **Figure 42.3**, which is another example of a multiple shoulder complex top. After a decline from a head-and-shoulders pattern just off the left side of the chart (only the right shoulder appears in the figure), price declines until reaching bottom at the start of July. Then it rises and creates a new head-and-shoulders pattern: a complex top. Admittedly, the higher two right shoulders are weak examples of shoulders. The minor highs are there but are not as pronounced as the corresponding pair to the left of the head.

If you ignore the labels for a moment, the inner price action looks like a rounding top. This smooth price rollover is common for complex head-and-shoulders tops.

Symmetry. You can divide Figure 42.3 into a pure head-and-shoulders top by ignoring the outer shoulders. For single-head patterns, this is the easiest way to correctly identify a complex head-and-shoulders top. First locate a regular head-and-shoulders top and then expand your view to include additional shoulders.

In this example, the head pokes above the surrounding shoulders. The two shoulders are usually equidistant, or nearly so, from the head. The price level of the left and right shoulders is nearly the same. Thus, the symmetry of a complex top is more pronounced than that of a regular head-and-shoulders top.

Table 42.1 Identification Guidelines

Characteristic	Discussion
Appearance	A head-and-shoulders top with multiple shoulders or, more rarely, two heads. The head is higher than the shoulders but generally not by very much.
Symmetry	The tendency for the shoulders to mirror themselves about the head is strong. The price level of the shoulders and time from the shoulder to head is about the same on either side of the head. The shoulders also appear to be the same shape: Narrow or wide shoulders on the left mirror those on the right.
Volume	Usually higher on the left side than on the right and usually seen when comparing the shoulders on the left with corresponding ones on the right. Overall, the volume trend recedes.
Neckline	Connects the lowest left shoulder valley with the lowest right shoulder valley. A close below the neckline signals a downward breakout.
Breakout direction	The breakout is always downward. For those cases with a steep, down-sloping neckline, use the lowest armpit on the right of the head as the breakout price.
Confirmation	The pattern confirms after a downward breakout. If price doesn't breakout downward, then you don't have a complex head-and-shoulders top.

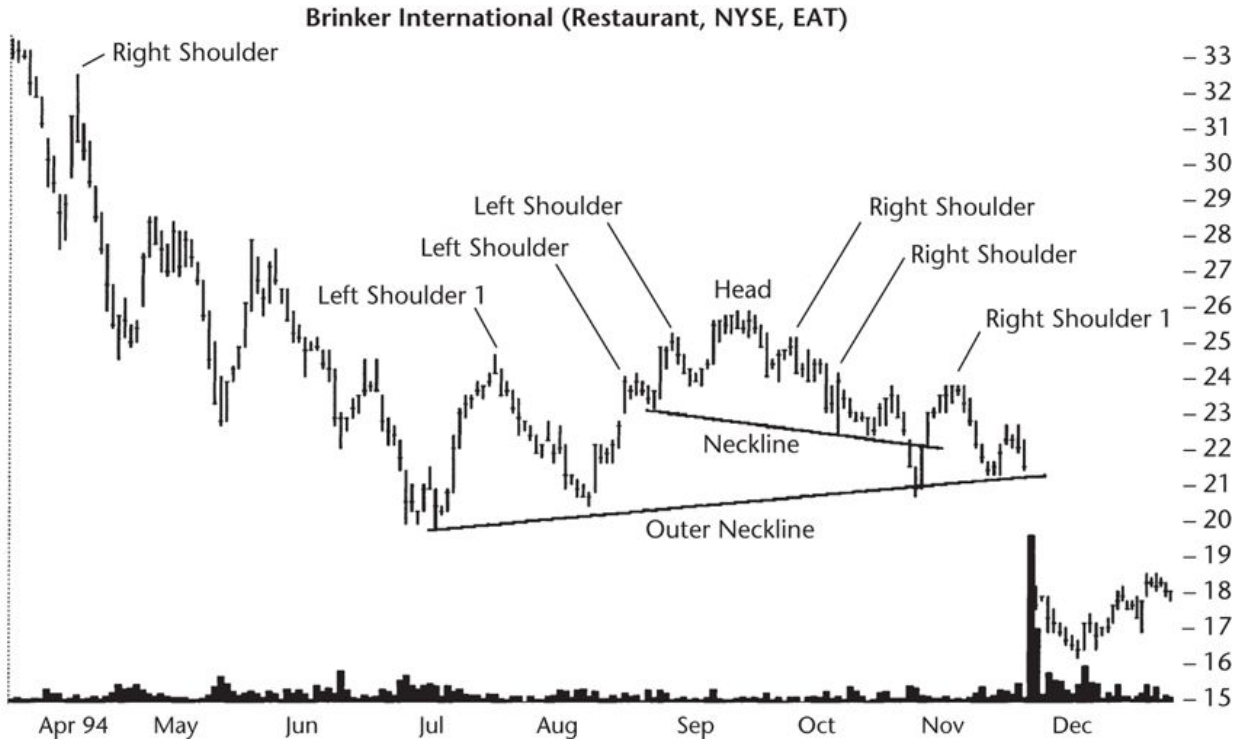


Figure 42.3 A more rounded-appearing complex head-and-shoulders top. Left shoulder 1 and right shoulder 1 could be considered part of a large head-and-shoulders top. The inner head-and-shoulders looks like a rounding top.

In a regular head-and-shoulders pattern, one shoulder may be higher in price than the other or one shoulder will be farther away from the head—a rather extended shoulder. That is usually not the case with the complex variety. Symmetry is a key identification element for a complex top.

Moving to the outer shoulders, they also are equidistant from the head and are very nearly at the same price level as well. Continuing the symmetry example, the two peaks labeled left shoulder 1 and right shoulder 1 appear to be shoulders of the same pattern, although farther away than the inner grouping.

Volume. If you could zoom in on the volume pattern, you would see it is marginally heavier on the left side of the pattern than on the right, at least for the pattern bounded by the inner (higher) neckline. High volume on the left side of the pattern as compared to the right is typical for complex tops and occurs about two-thirds of the time.

Neckline and breakout direction. The neckline joins the lows of the lowest valleys and is interpreted the same way as a normal head-and-shoulders top. Once price closes below the neckline, a downward breakout occurs and price moves lower. Volume typically rises on a breakout day and can remain high for several days, depending on the severity of the situation.

The breakout is always downward. Until price breaks out downward, you don't have a valid complex head-and-shoulders top.

Confirmation. The pattern confirms as a valid chart pattern when price closes below the neckline or right armpit. Until confirmation, the pattern is just squiggles on the chart.

Focus on Failures

Complex tops suffer two types of failures. **Figure 42.4** shows the first type. I define a downward breakout as a close below the neckline, or in the case of steep necklines, a close below the lowest shoulder trough (armpit) to the right of the head(s). The figure shows price declining below the neckline only once on 8 May but closing above it. From that point, price rises and moves above the highest head and an upward breakout occurs.

The pattern is well formed. It has two heads at about the same level and two shoulders also near the same price level. Symmetry throughout the pattern looks good, too, because the shoulders are equidistant from the head. Volume appears heavier on the left shoulder than on the right, as you would expect. Only during the decline from the right head to the right shoulder does volume rise. In short, there is no real indication that price will fail to continue moving down.

Although this pattern has all the ingredients of a complex top, it's not a valid complex head-and-shoulders top chart pattern (because it fails to confirm).

Figure 42.5 shows a slightly different situation. The stock suffers a 1-day drop of $2 at the breakout but then rises in an ascending broadening wedge pattern. The wedge is a bearish pattern that breaks out downward, but it, too, fails to see price descend far. Within a few months, the stock is again making new highs.

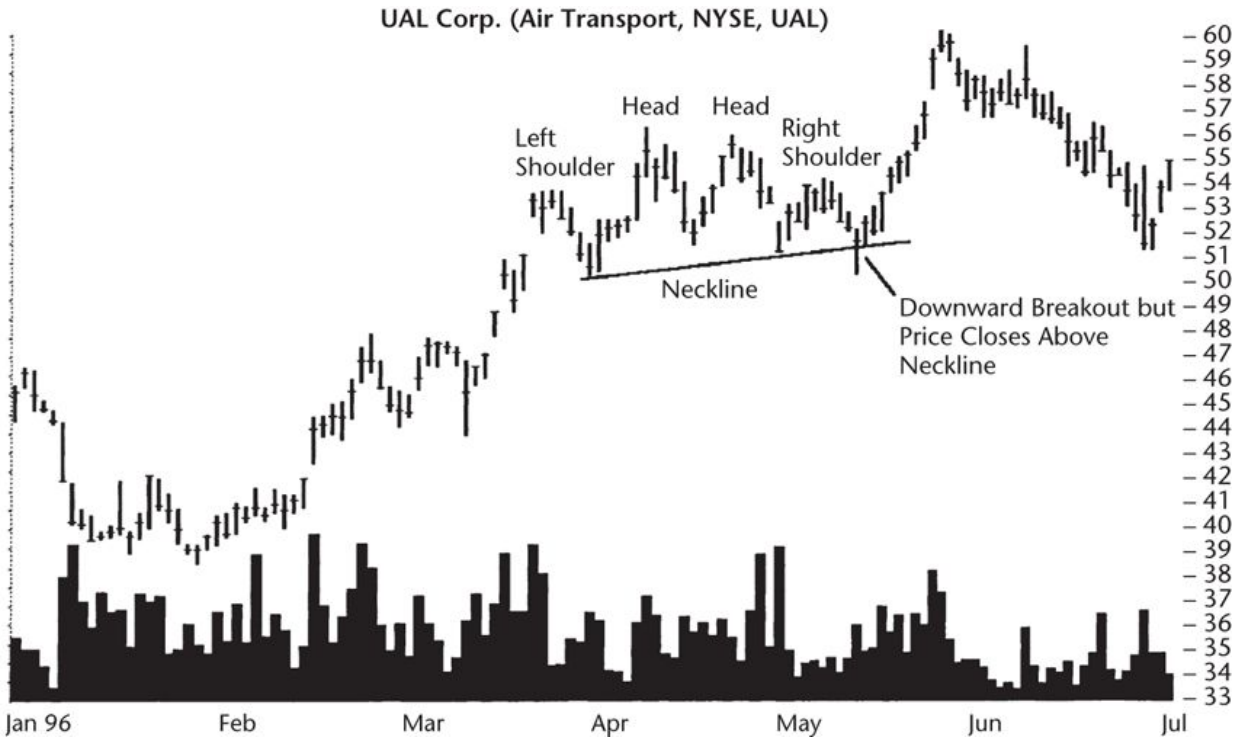


Figure 42.4 A complex head-and-shoulders failure to reverse. Price fails to close below the neckline before moving above the pattern's top and staging an upward breakout.

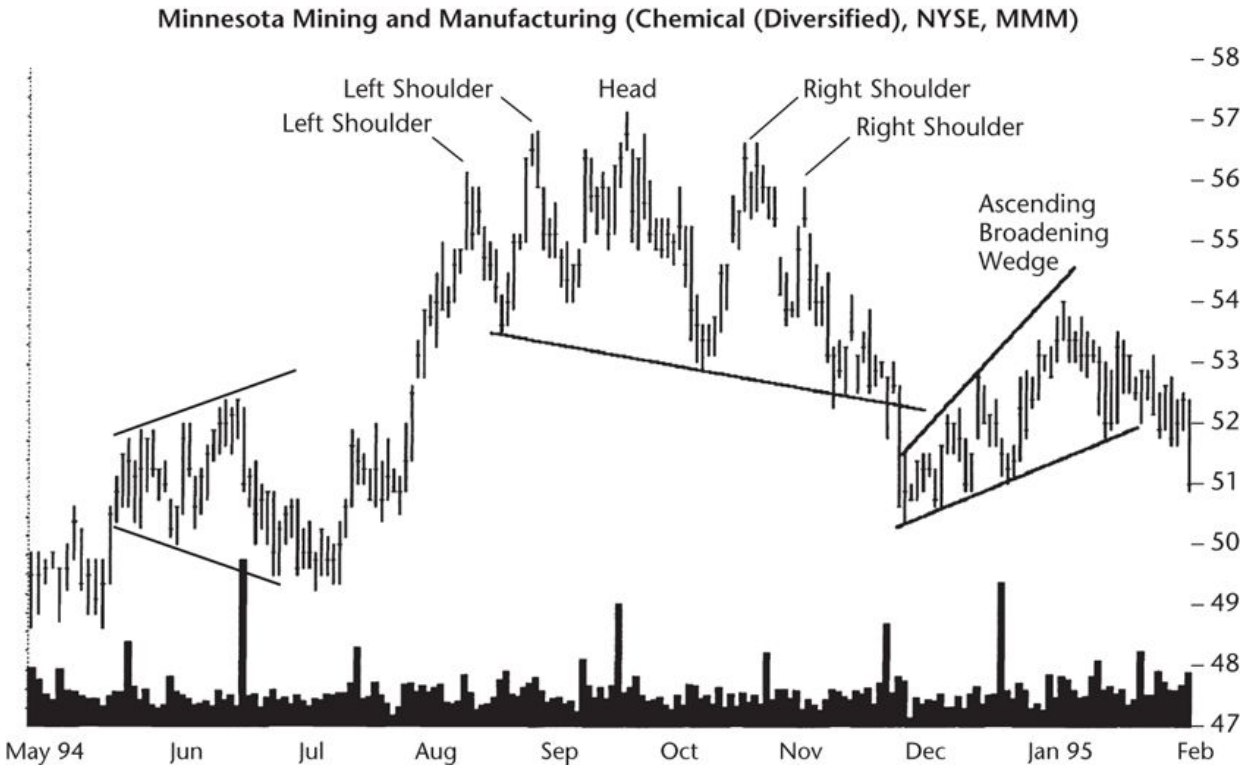


Figure 42.5 Another failure of a complex head-and-shoulders top. This one fails to decline more than 5% below the breakout point. An ascending broadening wedge takes shape in late November and December.

I regard the complex top as a failure because price fails to drop more than 5% after the breakout.

Are there any clues to the failure of this chart pattern? The volume pattern is flat. It shows no tendency to diminish over time. A receding volume pattern is not a hard-and-fast rule, so I do not consider that to be unusual. To answer the question, a closer examination of the fundamentals on the company may provide some clues. Usually in cases like this, underlying support stops a down trend. The May–June broadening top represents a consolidation region that supported price in December.

Statistics

Table 42.2 shows general statistics.

Number found. I located only 880 complex tops with the first in August 1991 and the most recent in October 2019, in 581 stocks. Not all stocks covered the entire span, and some no longer trade.

Reversal (R), continuation (C) occurrence. Since these patterns form at the top of an upward price trend with a downward breakout, they all act as reversals.

Average decline. The decline from a complex top is quite good when compared to other bearish chart patterns. In bear markets, the decline averages 23%, substantially above what we see in bull markets. That makes intuitive sense because the receding tide lowers all boats.

Standard & Poor's 500 change. The table shows the influence of the general market on the average decline. If the general market is declining, find a bearish chart pattern. In a rising market, trade only bullish chart patterns for the highest rewards (trade with the trend).

Days to ultimate low. It takes about 2 months or less for price to reach the ultimate low. Notice how the 42-day average decline in bear markets is less than the 59-day bull market number, yet price drops further. The bear market decline must be steeper to drop farther in a shorter time. In fact, the velocity in bear markets is almost twice as fast as in bull markets.

Table 42.2 General Statistics

Description	Bull Market	Bear Market
Number found	651	229
Reversal (R), continuation (C) occurrence	100% R	100% R
Average decline	–17%	–23%
Standard & Poor's 500 change	–2%	–10%
Days to ultimate low	59	42
How many change trend?	32%	53%

How many change trend? This is a count of how often price declines by more than 20%. I consider values above 50% to be good (for upward breakouts), but this chart pattern beats the benchmark even though the breakout is downward.

Table 42.3 lists failure rates. Complex tops have low failure rates (at the breakeven value) when compared to other chart patterns. In bear markets, just 7% fail to see price drop more than 5% after the breakout. Almost half (47%) fail to drop more than 20%.

Bull markets have substantially higher failure rates as the table shows.

Notice how the failure rates rise for small maximum price declines. The bear market number rises from 7% and almost triples to 20% for a 5-percentage-point rise in the maximum price decline.

In bull markets, 55% of complex tops will fail to see price drop no more than 15%. That's triple the breakeven failure rate (18%).

Table 42.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout direction from a complex top is downward. No exceptions. If price breaks out upward first, then you have an invalid complex top.

Yearly position, performance. Bearish patterns don't do well with this item and complex tops are another example. Bull markets show better performance if the breakout is within a third of the yearly low. Bear markets do best in the middle range. However, the differences (for their respective market) are close, so I'm not convinced this is something you need to pay attention to.

Pullbacks. Pullbacks occur about two-thirds of the time.

It takes less than 2 weeks for price to return to the breakout price. When a pullback occurs, the eventual decline is less than if the pullback was absent. Thus, for the best performance, look for underlying support and avoid trading a stock when support is nearby.

Table 42.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	118 or 18%	16 or 7%
10	144 or 40%	30 or 20%
15	94 or 55%	27 or 32%
20	85 or 68%	34 or 47%
25	59 or 77%	32 or 61%
30	47 or 84%	28 or 73%
35	39 or 90%	15 or 79%
50	51 or 98%	38 or 96%
75	13 or 100%	9 or 100%
Over 75	1 or 100%	0 or 100%

Table 42.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –18%, M –16%, H –16%	L –21%, M –23%, H –22%
Pullback occurrence	66%	65%
Average time to pullback bottoms	–6% in 6 days	–11% in 6 days
Average time to pullback ends	12 days	12 days
Average decline for patterns with pullbacks	–16%	–21%
Average decline for patterns without pullbacks	–18%	–25%
Percentage price resumes trend	61%	50%
Performance with breakout day gap	–18%	–23%
Performance without breakout day gap	–16%	–22%
Average gap size	$0.55	$0.60

Once a pullback completes, the stock resumes moving down between 50% and 61% of the time.

Gaps. Gaps help performance, but the performance difference isn't substantial.

Table 42.5 shows statistics related to pattern size.

Height. Tall patterns perform better than short ones. In bull markets we see the biggest difference: 20% versus 13%. Nice! In bear markets, the trend is similar but less startling.

To determine short or tall, I measured the height of the pattern from highest peak (usually the head) to the lowest low and divided by the breakout price. If the result beat the median in the table, then the pattern was tall.

Width. Wide patterns perform slightly better. I used the median width (not the average) to determine width.

Height and width combinations. The combination of height and width yields results that make your head itch. Consider the bull market results. The numbers say that tall patterns outperform and wide patterns outperform. So you'd think that patterns both tall and wide, on average, would outperform. Nooo! Tall and narrow ones do best (but tall and wide is close).

The bear market numbers are flubbed up, too. Clearly, though, avoid short and narrow patterns. They perform worst.

Table 42.6 shows volume-related statistics.

Table 42.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–20%	–23%
Short pattern performance	–13%	–22%
Median height as a percentage of breakout price	15.4%	22.8%
Narrow pattern performance	–15%	–22%
Wide pattern performance	–18%	–23%
Median width	60 days	61 days
Short and narrow performance	–13%	–21%
Short and wide performance	–14%	–24%
Tall and wide performance	–20%	–22%
Tall and narrow performance	–21%	–24%

Table 42.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	61% down	61% down
Rising volume trend performance	–17%	–23%
Falling volume trend performance	–17%	–22%
Heavy breakout volume performance	–16%	–23%
Light breakout volume performance	–17%	–23%

Volume trend. Volume trends downward most often, but don't be surprised if you see it trending upward. Don't throw away a pattern because it has an unusual volume pattern.

Rising/Falling volume, breakout day volume. I lumped the next several rows together because the performance difference from row to row is minor. It's not worth complaining about, which, oddly, is what I'm doing as I write this.

Table 42.7 is supposed to show how often a stop triggers, but my computer wouldn't cooperate with this pattern. I don't show the table.

Table 42.8 shows performance over three decades. It's one of my favorite tables (don't tell the other tables. They'll be jealous). Because the two bear markets occurred only in the 2000s, they are not included in the results.

Performance over time. The 1990s did very well, and the 2000s did very poorly. The 2010s were in the middle.

Table 42.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–20%
2000s	–13%
2010s	–16%
Performance (above), Failures (below)	
1990s	10%
2000s	25%
2010s	23%

Table 42.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	190 or 29%	23 or 10%
Single bust count	120 or 63%	15 or 65%
Double bust count	9 or 5%	0 or 0%
Triple+ bust count	61 or 32%	8 or 35%
Performance for all busted patterns	33%	26%
Single busted performance	50%	38%
Non-busted performance (complex head-and-shoulders bottoms)	47%	32%

Failures over time. This is one of the few cases where performance matches the failure rate. For example, the 1990s had the best performance and lowest failure rate. The 2000s had the worst performance and the highest failures. That's how it is supposed to be. It makes intuitive sense.

Table 42.9 shows busted pattern performance.

Busted patterns count. Few complex tops bust, especially in bear markets (just 23 did, too few to be worth discussing).

Busted occurrence. I sorted the busted patterns into how often they busted. Single busts, as one would expect, happen most often. In second place are patterns that bust more than twice (triple+). Usually they are triple busts, but there must be a few four or five busts hidden in there. Double busts are rare.

Busted and non-busted performance. I compared the performance of a complex head-and-shoulders *bottom* as a proxy for a non-busted complex *top*. Single busted complex tops perform better than the other two categories (“all busted patterns” and “non-busted” ones).

However, you have to trade a single busted pattern, and even though they happen 63% of the time, that suggests you may be wrong almost a third of the time (meaning it'll double or triple+ bust).

Trading Tactics

Table 42.10 presents the trading tactics for complex head-and-shoulders tops.

Measure rule. Use the measure rule to help predict the expected decline. Look at Figure 42.6 as an example of how to use the measure rule.

Compute the formation height by subtracting the difference between the highest high (31.63, head) from the value of the neckline directly below the highest high (27). Subtract the result (4.63) from the breakout price (25.75). Price drops below the target of 21.12 in early March.

The bottom portion of the table shows how often the measure rule works for various heights. In the above example, I used the pattern's full height. Price will reach the target between 46% and 47% of the time on average.

To improve the success rate of the measure rule, cut the height in half and use it in the measure rule. Using half the height works 72% of the time, but if price reaches the target and you cover a short there, profit will be less than if price dropped to a full height target.

Table 42.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the neckline value from the highest high reached in the head, measured vertically. Subtract the result from the breakout price. The result is the target price. The bottom portion of the table shows how often the measure rule works.
Launch price	If the formation looks like a mountain suddenly appearing out of a flat plain, price may return to the launch price. Figures 42.2 and 42.5 show examples.
Wait for confirmation	If a simple head-and-shoulders pattern confirms, consider trading it without waiting for the complex top to confirm. Place a short trade or sell any long commitments. This formation rarely disappoints, and the decline is above average.
Stop location	Look for resistance areas near the neckline. The shoulder tops and head also represent good locations for stop-loss orders.
Busted trade	See Table 42.9 for details. In bull markets, single busted patterns can be quite profitable.
Tips	See text.

Description	Bull Market	Bear Market
Percentage reaching half height target	72%	72%
Percentage reaching full height target	47%	46%
Percentage reaching 2× height	18%	18%
Percentage reaching 3× height	8%	10%

For a check of how many patterns will fail to reach the target, convert the height of the pattern into a percentage of the current price (in our example, that's 4.63/25.75 or 18%). Table 42.3 says that in bull markets, 68% will fail to see price drop more than 20% (the closest to our 18%).

The large number suggests price might not decline as far as you expect.

Launch price. Imagine a flat landscape with a hill in the middle of it. That hill represents the head-and-shoulders pattern. If you see that situation on a price chart, the stock might return to bottom just above the launch price (the price where the stock started its uphill run to the complex top).

Figure 42.1 shows an example of this. Price started its move up to the left shoulder in late October, and when the complex top completed, the stock dropped and bottomed in mid-January near the launch price (about 29).

Figure 42.2 shows another example. The launch price is about 14 or 15 in early November, and the stock returned there in June.

What we're seeing is price dropping until it finds support, like that shown in Figure 42.5, near 50, slightly above the launch price.

Wait for confirmation. Since a simple head-and-shoulders pattern makes the core of a complex top, trade the inner head-and-shoulders. That strategy may allow you to place a trade sooner than waiting for price to close below the neckline or armpit of the complex top. For conservative investors, wait for the complex top to confirm.

Consider selling a stock if the complex top confirms. In bull markets, a complex top will send price down farther than a simple head-and-shoulders top, but the differences are minor.

Stop location. For short positions, look for areas of strength—overhead resistance—and place a stop-loss order just above that level. Common resistance levels are the shoulder valleys, shoulder tops, and head top. Should price close above the highest high in the complex top, cover the short, because price is likely to continue rising.

Busted trade. If the stock drops no more than 10% after the breakout and then closes above the top of the complex top, consider buying the stock. In bull markets, single busted patterns happen 63% of the time and price rises an average of 50% (median: 36%) above the top of the complex top. That's for a perfect trade, but you should be able to nibble off some of that move, and perhaps more.

Tips. I have some tips I want to pass on from studying complex tops and other bearish patterns.

If you're thinking of shorting a stock, look for a knot of support closest to the bottom of the complex top. In Figure 42.5, for example, it's the sideways move in mid-July, just before price zips higher into the left shoulder. Look for at least 3 days of price moving sideways with lots of overlap.

The first drop out of the complex top will find that knot and either stall there or turn into a pullback. But the *top* of that knot is your swing target. We see price return to the price of that knot in November and turn upward. The knot of support should be the first one *below* the confirmation price. It makes for a great swing trading target. Chapter 1 gives a good tutorial on knots.

- Look for knots close by.

Here's another tip: The figures in this book are nice-looking complex tops, many with straight-line runs leading to the start of the complex head-and-shoulders. However, what I'm seeing now, in the 2020s, looks like a slightly taller mountain in a mountain range. Thus, trying to pick how far price might drop is more difficult.

The knot scenario described above still works, though. However, do look at prior peaks and valleys to assess how far price might drop. The peak or valley would be a location above the knot, so it would be a closer target.

- Look for underlying support set up by prior peaks, valleys, and consolidation regions.

If you do see a head-and-shoulders sitting atop a mountain with the hills far below, then expect a larger decline. These setups will be rare, but they are the ones that will make you the most money. Look at the run up to the complex top. If it's a straight-line run, then perhaps price will return to bottom just above the launch price. Figure 42.2 shows the setup you're looking for.

- Sometimes a quick decline follows a quick rise.

In many cases, I see a complex top forming at the end of a horizontal price move. That's a number of peaks where price has moved sideways for a year or more. Perhaps it's a function of bull markets, but complex tops in these patterns tend to bust. They confirm as valid complex head-and-shoulders tops, sure, but price reverses before reaching the bottom of that horizontal range. Price climbs and begins a new climb to the moon. Do *not* short these patterns.

Avoid complex head-and-shoulders tops where the stock has moved horizontally for a year or more before the chart patterns begin.

For all trades, place a stop above the right shoulder, or worst case, above the head. You don't want a short sale to get away from you.

Table 42.11 shows special features of the complex top. I removed bull market results because they showed little performance difference.

Neckline slope. In bear markets, if the neckline slopes downward, price drops 24% compared to a drop of 21% if the neckline slopes upward. Cool beans!

Shoulder highs. The results for this one are unexciting. I measured performance of complex tops by comparing the highest of the left shoulder with the highest right shoulder and checking performance. Patterns with a higher left shoulder result in better performance, but not so you'd notice.

Table 42.11 Special Features

Description	Bear Market
Neckline slopes up, performance	–21%
Neckline slopes down, performance	–24%
Left shoulder above right, performance	–23%
Left shoulder below right, performance	–22%

Sample Trade

Henry runs a small hedge fund. He considered buying into the stock shown in Figure 42.6, but needed more bullish evidence. In August 1994 (not shown), indicators he uses on a daily basis confirmed a buy signal, so he bought shares for his fund at an average price of 17.25.

"In January 1995, I thought the end of the uptrend was coming, so I started looking at the fundamentals." He was so engrossed with his research on the company that he failed to notice a pattern forming. Over drinks with his fund manager friends, he shared with them what he had dug up about the company. The news was not good.

"So that's why it's making a broadening top!" one remarked. Henry furrowed his brow and pictured the price action in his mind, and there it was, a broadening top, just like his friend had said.

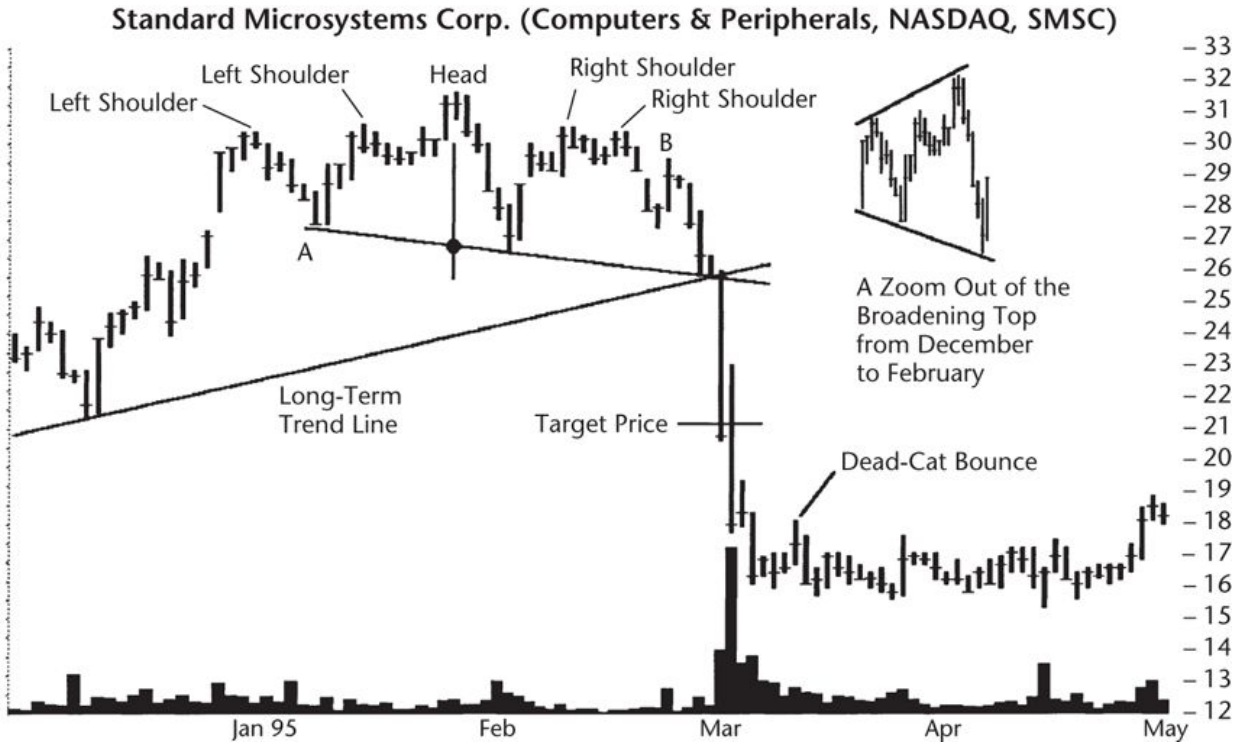


Figure 42.6 A complex head-and-shoulders top. For the measure rule, compute the difference between the highest high and the neckline, measured vertically, and subtract the result from the breakout price. A broadening top appears from December through February and a dead-cat bounce follows.

The next day Henry pulled up the chart and looked at it more closely. He saw higher highs and lower lows (see the zoom-out in Figure 42.6), characteristic of a broadening top. Coupled with his fundamental research on the company, he knew it was nearing time to sell, but not yet. He wanted to sell at the top, when price tagged the top trendline.

In early February, when price attempted to reach the previous high, it fell short, dipped down for a few days, and tried again (the two right shoulders). The second rise was even shorter than the prior one, signaling weakness, so Henry started selling immediately.

The failure of price to sail across the pattern and touch the top of the broadening formation meant it was a partial rise. A partial rise in a broadening top suggests a downward breakout will follow.

By the time the stock pulled back up to the base of the two right shoulders (point B), Henry had sold his holdings. As he was getting ready to leave his office for home, something on his computer screen caught his eye. The broadening pattern had changed into a complex head-and-shoulders top. There were the two left shoulders balancing the two right ones with a head perched in the center.

Henry discussed the new situation with his mentor and his fund manager buddies, and then decided to short the stock. By the time price reached the long-term up trendline, he had a tidy sum sold short.

Two days later, price tumbled. It dropped 20% or $5 a share in 1 day and continued down. In less than a week, it was at 16 before finding some support, a plummet of 36%.

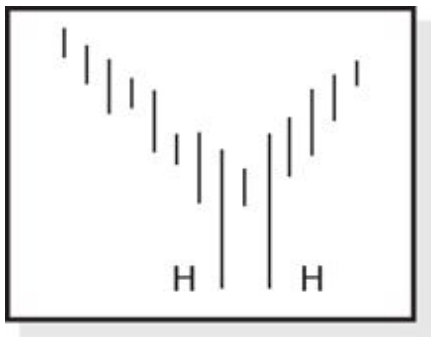
Henry had studied the behavior of dead-cat bounces, and he pulled out his notes and brushed up. He knew the stock would bounce, usually within a week, and then trend lower.

True to form, price moved up a bit (to 18.13), but it was not the smooth, rounded bounce he expected. In the coming days, price moved lower, so Henry quit complaining, but he watched the situation closely.

The stock bottomed out at about 16 and trended horizontally. “It looked like the stock was building a base and preparing for an upward

move, so I covered half of the short position. In late April, when price jumped up to 18.50, I covered the remainder of the position. I made a chunk of change on that one."

43
Horn Bottoms



RESULTS SNAPSHOT

Appearance: Two downward price spikes separated by a week on the weekly chart.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Short-term bullish reversal
Performance rank	2 out of 3	1 (best) out of 2
Breakeven failure rate	6%	9%
Average rise	59%	34%
Volume trend	Downward	Downward
Percentage meeting price target	74%	53%
See also	Double bottoms (all varieties of Adam and Eve), pipe bottoms	

I first discovered horn bottoms while pondering a result from my study of double bottoms. Double bottoms with bottoms closer together performed better than those spaced widely apart (because I did the study years ago, don't take this as still valid). What would happen if you considered patterns that have bottoms only a week or

so apart? I tested the idea and discovered that the chart pattern performs well.

All of the statistical results in this chapter use the weekly scale. Thus, the search for the ultimate high will result in larger values than if it is conducted on the daily scale. That's because on the daily scale, price can close below the bottom of a pattern (forcing an end to the search for the ultimate high), but on the weekly scale, it might not (because the price bar uses the closing price at week's end, which might remain above the pattern's low). That allows trends to continue on the weekly scale, whereas on the daily, the trend would end.

Because the results are different depending on the time scale, I don't rank this pattern against other patterns that use the daily scale. However, I did rank them against pipes and diving boards, both of which use the weekly scale.

Tour

Figure 43.1 shows what a horn bottom looks like. After peaking in late December 1993, price plummeted from a high of 50.75 to the horn low at a base of 30.75. On the left side of the horn, price has a tall weekly price range of about $7. High volume makes the week appear like a one-week reversal (with the same attributes as a one-day reversal but over the course of a week), signaling a possible trend change.

The following week, price closed lower but nowhere near the left horn low. Then, 1 week later, price spiked lower again but closed near the high for the week and just 13 cents below the prior close. The horn bottom was complete: A double price spike separated by 1 week marked the turning point. From then on, price moved up and more than doubled from the horn low in about a year and a half.

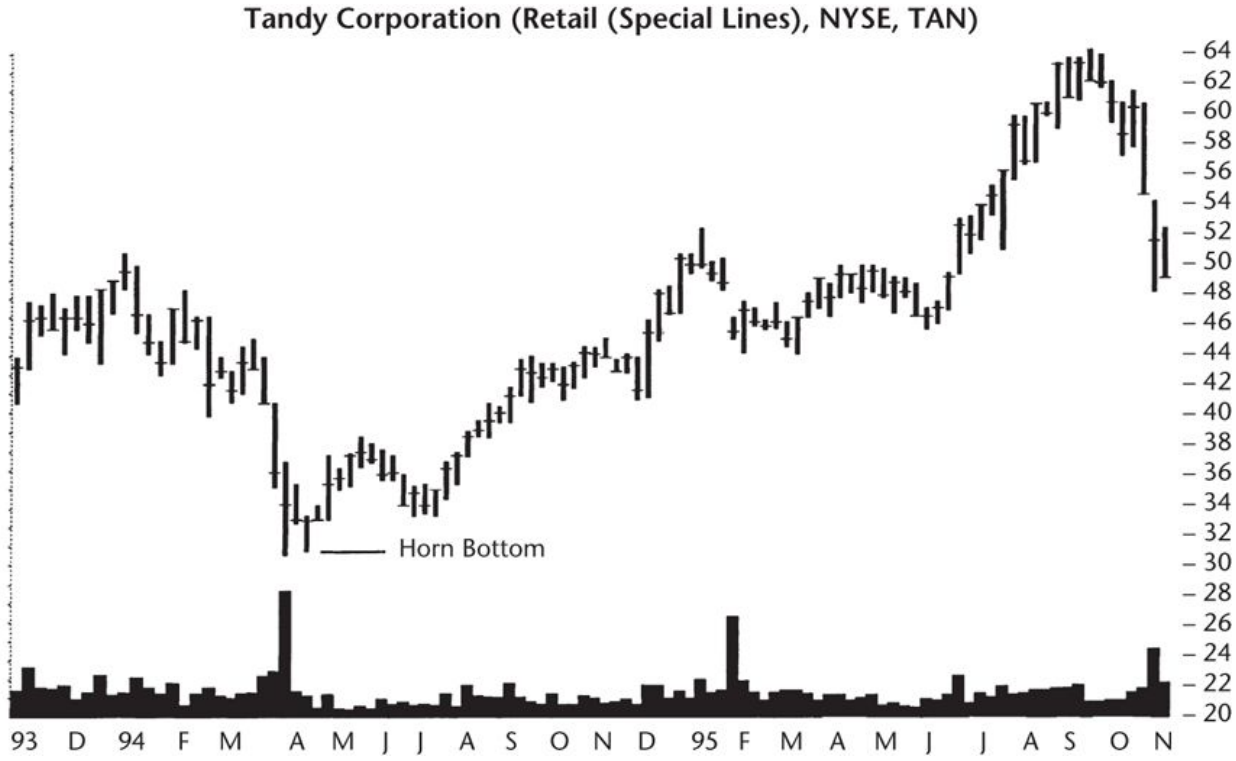


Figure 43.1 A good example of a horn bottom. Two downward price spikes, separated by a week, look like a steer's horn flipped upside-down.

Identification Guidelines

How do you correctly identify horn bottoms? **Table 43.1** shows identification characteristics.

Appearance. Horns are visible on weekly charts. Although they appear on daily charts, weekly charts make selection easier and performance more reliable. For the horn on the left in **Figure 43.2**, the chart shows two tall, downward price spikes separated by a week. The low of the center week stays well above either of the spike lows, emphasizing the inverted horn shape of the pattern.

Looking back over the months, you can see that there are no downward spikes that come near the height of the horn spikes (as measured from the lowest low to the lower of the two adjacent weeks). The twin horns mark an unusual event, one that an investor should pay attention to.

Clear visibility. For the left horn in the figure, the pattern appears after a downward price trend, allowing clear visibility to the left of the horn, because no downward trends or price outliers obscure the view. This visibility is important in that the horn should stand alone and not be part of a congestion region. It should mark the turning point of a downward price trend. However, because horns are rare, be flexible on visibility. The horn on the right of the chart doesn't have the type of visibility you see on the left horn, but it's still a valid pattern.

The horn on the right side of the chart is what the pattern looks like in an uptrend. There is a small price retrace of 3 weeks' duration just as the horn bottoms out. These few weeks separate the horn from the surrounding price action and allow easy recognition.

Table 43.1 Identification Guidelines

Characteristic	Discussion
Appearance	Use the weekly chart and locate two downward price spikes separated by a week. The two spikes should be taller than similar spikes over the prior year and be well below the low of the center week. The formation should look like an inverted horn.
Clear visibility	In a downtrend, the horn lows should be well below the surrounding lows, especially to the left of the formation for several weeks (ideally, but be flexible). Usually, horns appear near the end of declines but also happen on retraces in uptrends (where visibility is less clear to the left).
Breakout direction, confirmation	Breakout is upward. If price first closes below the bottom of the horn, then the pattern is not a horn. When price breaks out upward, it confirms the horn as a valid chart pattern.

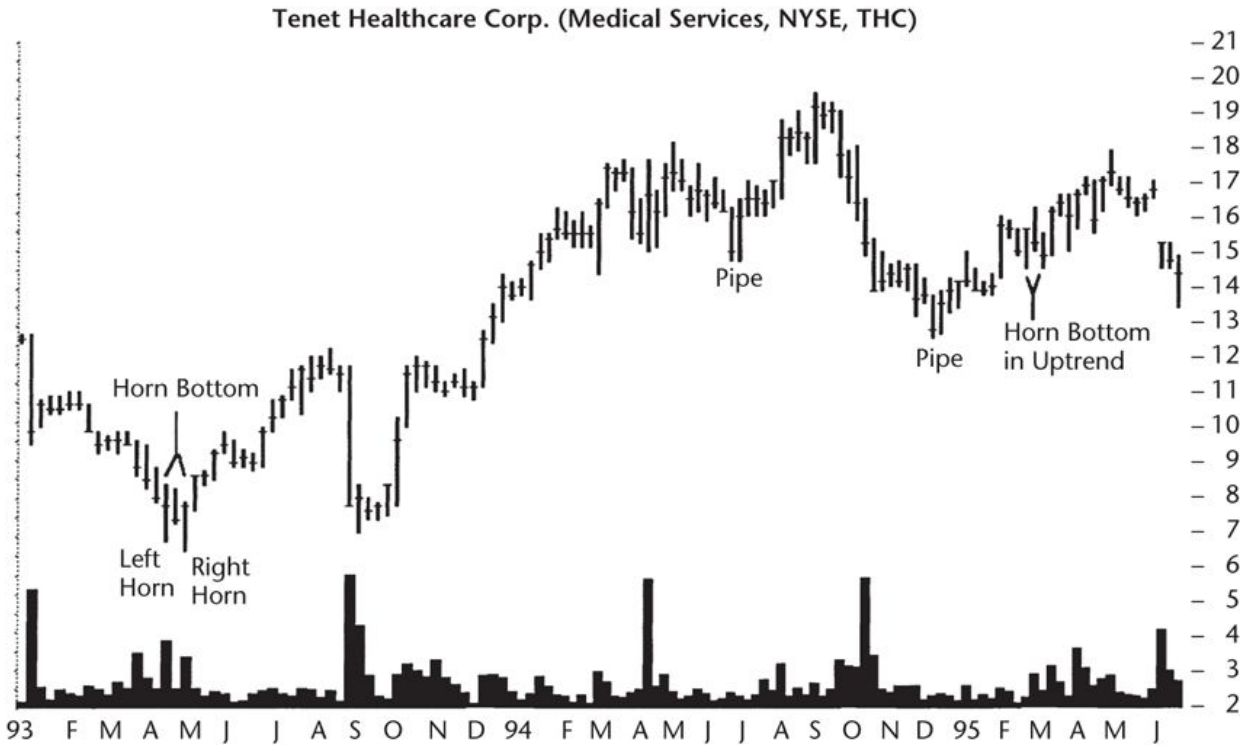


Figure 43.2 Two examples of horns, one in a downward trend and one in an uptrend. Notice that the right *pipe* calls the bottom turn exactly.

The two spikes share the same low price, 14.50, and have good price overlap (as the right spike almost completely overlaps the left one). You can argue that the separation of the horn low from the surrounding weeks is not exceptional when compared with the pipe formations in early December and late June. That is certainly true, but most of the price bottoms over the prior year show remarkably even bottoms, not a jagged coastline (few tall spikes, in other words).

Breakout direction, confirmation. Because we're dealing with a bottom pattern, the breakout is always upward. The twin bottom pattern confirms as a valid horn bottom when price closes above the highest high in the 3-week pattern. Without confirmation, you have no horn.

Focus on Failures

Even though horn bottoms sport a low breakeven failure rate, they still fail. Consider **Figure 43.3**, which shows a 5% failure or a horn bottom. A 5% failure is when price starts out in the correct direction but falters (rising by no more than 5%), turns around, and heads back down.

In this example, the two downward price spikes look good in that they are tall and with good overlap. They form as part of a retrace from the November high, and price usually returns to form a second high (a double top), or perhaps move even higher. If you believe that this stock will form a second top, then the horn is probably not worth betting on because the price appreciation potential is just not exciting (to me, anyway).

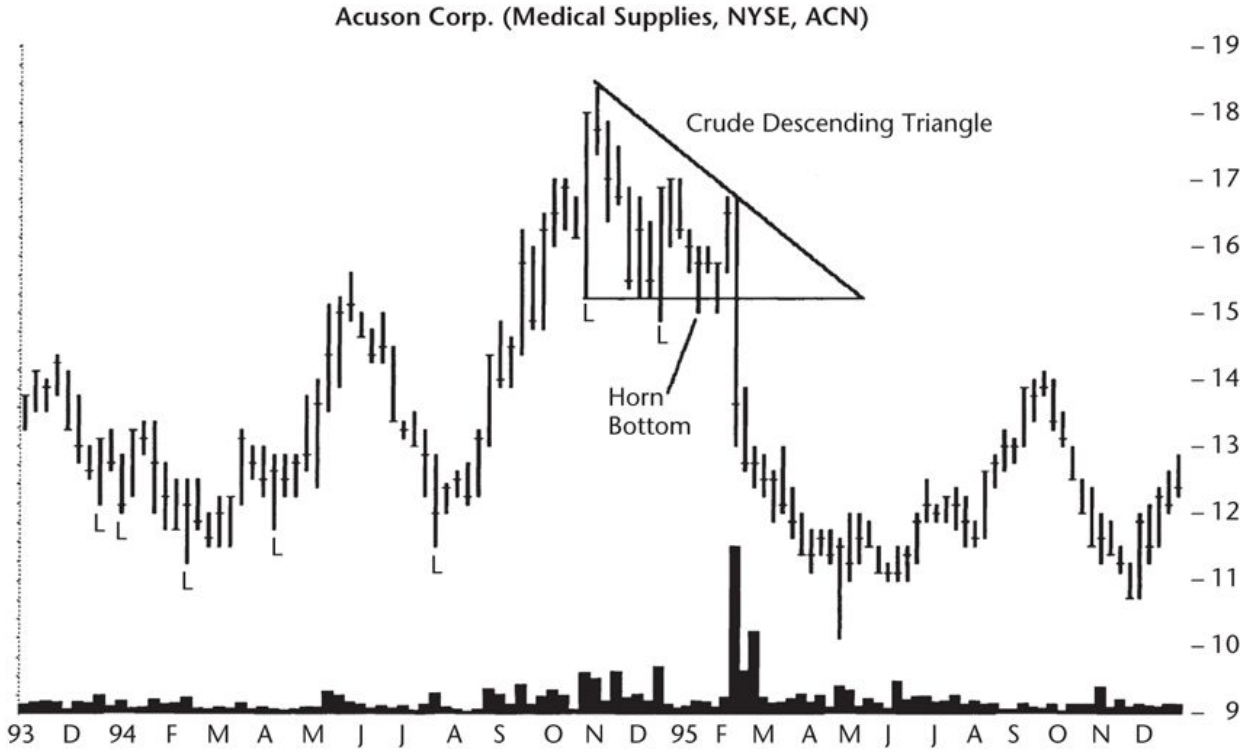


Figure 43.3 A horn bottom failure. Among other clues, similar-height price spikes (marked L) suggest this horn might be suspect. The descending triangle suggests a downward move.

Also, I have found that when a bullish pattern (like the horn) appears at the end of a long peak where price moves horizontally (as it does from November to the horn), forming a flat bottom or a block of

horizontal price movement, many bullish chart patterns will fail. So the setup for the horn is bad right from the start.

If you take a wider view of this chart, you might suspect that it will form a head-and-shoulders top. The left shoulder is already visible in late May 1994, and another shoulder could form as part of a mirror image, probably in April or May 1995 (it appeared much later, in September 1995). If that is the case, then you should also skip this trade because the right shoulder might top out at about 16. This theory assumes price continues moving lower and probably stops dropping in the 10-to-12 range (forming the neckline) before moving up to the right shoulder. Since price should drop, why buy now?

Another clue to this horn failure is the spikes themselves. If you look over prior price action, you'll see several downward price spikes that rival the height of the horn. These are warning signs that this horn might not be anything special (and you're looking for unique).

The visibility is poor because earlier prices block the view. Usually, a downtrend has lower lows (like that shown in the February to April 1995 decline). A horn appearing in a sharp decline should have good visibility to the left of the pattern. What this obscured view tells us is that price seems to form a base while the price tops are declining. In other words, a descending triangle is forming and the investor should be wary (the theory is that the descending triangle is bearish).

Taken together, there seems to be ample evidence that this horn might not work out as expected. But, statistically, how often do horn bottoms fail? We'll see the answer in a bit as we review the numbers.

Statistics

Table 43.2 shows general statistics for horns.

Number found. I found 1,485 horns on the weekly charts with the first one appearing in August 1991 and the most recent in December 2019, finding them in 762 stocks. Not all stocks covered the entire period, and some stocks no longer trade.

Reversal (R), continuation (C) occurrence. All of the horns I studied were reversals of the downward price trend. In other words, they were bottoms, not tops. Some appeared in a rising price trend with just a week or two drop leading into the horn, but most appeared near the end of a downward trend.

Average rise. The average rise in bull markets is almost twice what it is in bear markets. This makes intuitive sense. Think of trying to swim with (bullish horn, bullish market) or against a current (bullish horn, bearish market). If you don't get run over by a boat, you can still reach shore, but you'll be more tired after fighting the current. So trade with the trend.

Standard & Poor's 500 change. The S&P climbed 13% in bull markets and 4% in bear markets, as measured from the day of the horn breakout to the ultimate high. The *rise* in *bear* markets is somewhat unusual. Both markets helped the pattern perform better (the rising-tide-lifts-all-boats thing). Don't you hate clichés?

Days to ultimate high. It took 6 months for price to reach the ultimate high in bull markets, but 3 months in bear markets. Even though bear markets saw price climb 34% on average, the climb is steeper than in bull markets. How steep, you ask? It's 20% faster. In other chart patterns (those on the daily scale), the velocity can be twice as fast in bear markets as in bull markets.

Table 43.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,079	406
Reversal (R), continuation (C) occurrence	100% R	100% R
Average rise	59%	34%
Standard & Poor's 500 change	13%	4%
Days to ultimate high	183	89
How many change trend?	65%	50%

How many change trend? This is a measure of how many horns see price rise more than 20% after the breakout. For patterns on the daily charts, I'm ecstatic to see values above 50%. Both the bull and bear markets meet that threshold, so horns do exceptionally well.

Table 43.3 shows failure rates for horn bottoms. Notice that the failure rates start small but get bigger, fast.

How do you read the table? Let me give you some examples. In bull markets, about a third (35%) fail to see price rise more than 20%. Half do not rise more than 30%.

If you want to make a 10% profit above a 5% commission and fees (15% total), 27% of the horns in bull markets and 41% in bear markets will fail to meet your profit objectives.

Table 43.4 shows breakout-related statistics.

Breakout direction. By definition, the breakout is always upward. If you have a horn that does not break out upward, then it's not a horn (or you haven't waited long enough).

Table 43.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	70 or 6%	36 or 9%
10	124 or 18%	57 or 23%
15	92 or 27%	74 or 41%
20	95 or 35%	36 or 50%
25	81 or 43%	23 or 56%
30	67 or 49%	26 or 62%
35	61 or 55%	26 or 68%
50	129 or 67%	54 or 82%
75	117 or 77%	38 or 91%
Over 75	243 or 100%	36 or 100%

Table 43.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 59%, M 52%, H 63%	L 38%, M 33%, H 29%

Yearly position, performance. The best performing horns in bull markets have breakouts within a third of the yearly high (suggesting a momentum play: buy high, sell higher). You'll want to stay out of the middle third.

In bear markets, those near the yearly low do best (a bottom-fishing play: buy low, sell high) and those near the yearly high do worst.

Table 43.5 shows pattern size statistics. Because we know the horn is a 3-week pattern, there is no width to consider and no combination of height and width to ponder. That simplifies things.

Height. Tall patterns perform better than short ones, as the table shows.

Tall means the difference between the highest high and lowest low in the three-bar pattern (weekly scale), divided by the highest high (the breakout price). Horns taller than the median saw price climb more than did those shorter than the median.

Table 43.6 shows volume-related statistics. Remember, we're dealing with a 3-bar pattern.

Volume trend. I used linear regression to find the slope of the volume trend from the left horn spike to the right one. Let's discuss performance in bull markets. You can see the results for bear markets if you're so inclined.

Rising/Falling volume. Horns with falling volume performed substantially better than did those with rising volume.

Breakout day volume. I computed the 1-month average volume and compared it to the breakout for each stock. Patterns with heavy breakout volume performed substantially better than did those with light breakout volume.

Table 43.7 shows how often price reached a stop location. I'm not sure if dividing the pattern in half makes sense for horns. They tend to be short anyway. If you feel the need to hold your nose while I discuss the statistics, that's fine. I won't take offense.

If you place a stop-loss order at the top of the horn (the tallest of the three bars), price will hit the stop between 67% and 74% of the time. You might ask yourself why it's so low. (I expected something like 90% or 95% when I started calculating this for other chart patterns. I thought I'd made a mistake.) That's because price shoots up and tags the ultimate high, then retraces. That retrace may snag the stop. However, my computer stops looking after price reaches the ultimate high.

If you place a stop at the bottom of the horn, then the stock will seldom trigger as price searches for the ultimate high. Keep in mind that if you hold onto the trade beyond the ultimate high, then price might drop and tag your stop, taking you out of the trade.

Table 43.8 shows the performance over three decades.

Performance over time. The 2000s were the banner year for horn performance. The 2010s show the worst performance. If that

underperformance continues, it's bad news for us traders looking to make money.

Failures over time. The failure rates over time have been stable, which I find reassuring.

Table 43.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	61%	38%
Short pattern performance	57%	30%
Median height as a percentage of breakout price	13.5%	17.8%

Table 43.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	57% down	69% down
Rising volume trend performance	54%	33%
Falling volume trend performance	62%	34%
Heavy breakout volume performance	62%	36%
Light breakout volume performance	53%	31%

Table 43.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	67%	74%
Middle	24%	22%
Pattern bottom	5%	4%

Table 43.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	55%
2000s	72%
2010s	49%
Performance (above), Failures (below)	
1990s	7%
2000s	5%
2010s	7%

Table 43.9 shows busted pattern performance.

Busted patterns count. With terrific performance from horns, we see that few patterns bust.

Table 43.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	174 or 16%	82 or 20%
Single bust count	107 or 61%	61 or 74%
Double bust count	49 or 28%	12 or 15%
Triple+ bust count	18 or 10%	9 or 11%
Performance for all busted patterns	–21%	–29%
Single busted performance	–23%	–27%
Non-busted performance (Horn tops)	–19%	–26%

Busted occurrence. I counted the types of busts (single, double, and more than two) and found most were single busts, as one might expect.

Busted and non-busted performance. I used horn *tops* as the proxy for a horn bottom with a downward breakout. The decline after a busted horn isn't spectacular enough to consider, I think. However, in bull markets, single busted patterns perform best.

Trading Tactics

Table 43.10 shows trading tactics.

Measure rule, targets. Compute the horn height by subtracting the lowest low from the highest high. Add the difference to the highest high to get the target price.

The lower portion of the table shows how often the measure rule works. Because the horn can be a short pattern, it is comparatively easy for price to rise far enough to reach the target. Nothing is guaranteed, of course, and your situation will vary.

Once you have a target in mind, take the distance from the target and divide it by the current price. Take the result and use Table 43.3 to check how many horns will fail to rise to the target. For example, say the horn's target is $1 away in a $10 stock. That's a rise of 10%. Table 43.3 says that 18% of horns will fail to see price rise more than 10%. That sounds like a reasonable target to me (82% of trades should see price reach the target in bull markets).

Identify. Perhaps the most important key to horn bottoms is that they should continue to look like horns (see “Clear visibility” in Table 43.1). Price should climb after the twin horn spikes. You'll likely need to wait an extra week to prove this is true.

Uptrends. Separate the price trend leading to the horn into either an uptrend or downtrend. Horns that appear late in uptrends may mark the end of the upward price move. Price continues moving higher (perhaps by 10% or so) and then stops. Of course, if your horn appears at the start of an uptrend, then the stock might well be on its way to a large gain.

Table 43.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Subtract the highest high from the lowest low in the horn (to get the pattern's height) and add it to the highest high. The result is the target price. The bottom portion of the table shows the success rate of the measure rule using various heights.
Identify	Use the characteristics outlined in Table 43.1 to correctly identify a horn bottom. The week after the right bottom is key. Price should climb smartly, and the weekly low should not be anywhere near the horn low (in other words, the horn should still look like a horn and not be encroached on by the succeeding price action).
Uptrends	Some horns appear near the end of uptrends, so watch for the trend to change.
Downtrends	Horns will usually not mark the end of the downtrend, but they will be close. Price might continue to drift down for $1 or so (below the lowest spike low) and then head upward.
Stop location	See Table 43.7 for guidance.

Description	Bull Market	Bear Market
Percentage reaching half height target	91%	78%
Percentage reaching full height target	74%	53%
Percentage reaching 2× height	53%	32%
Percentage reaching 3× height	40%	17%

Downtrends. Horns in downtrends are common. On the one hand, if the downtrend is just a retrace of the prevailing uptrend, then refer to the uptrend guideline. In such a case, if the horn appears after an extensive advance, then the uptrend may be nearly over. Invest cautiously or look elsewhere.

On the other hand, if the stock has been trending downward for a long time (for months anyway), then the end of the downtrend might be near. The horn probably will not mark the low exactly, but it should be close. Usually, horns appear a month or so before or after the actual turning point.

If price is trending down and you see a horn forming, you might wait before buying the stock, just to be sure price has really turned around. For uptrends, consider buying into the situation immediately since price will only climb away from you.

Stop location. Table 43.7 gives guidance on stop location, so read the discussion associated with it.

Table 43.11 shows special performance features of horns.

Table 43.11 Special Features

Description	Bull Market	Bear Market
Spike height shorter than average, median performance	32%	29%
Spike height taller than average, median performance	30%	16%
Spike height twice the average, median performance	38%	22%
Lower left spike, median performance	30%	21%
Lower right spike, median performance	31%	17%
Median horn difference as percentage of breakout price	1%	1%
Difference > median, median performance	32%	23%
Difference <= median, median performance	30%	18%

Spike height performance. I measured the average height of price spikes over the prior year for each stock and compared it to each horn's spike (so I don't have an average spike height of all stocks to share). The horn spike size was the difference between the highest horn *low* and the lower of the three surrounding weekly lows (that is, the week before the pattern, the middle week, and the week after the

horn). Then I collected the results, and the table reports the *median* percentage rise, not the average. I found that the average gave results too high because of one outlier sample.

In bull markets, I didn't see much performance difference, but spikes shorter than the average led to slightly better performance. In bear markets, I saw the same trend with short spikes outperforming, but the difference in performance is substantial.

I also tested horn spikes at least twice as tall as the average. Here the median performance in bull markets did very well, but in bear markets they underperformed shorter height spikes.

I consider the results unusual. In bull markets, the results say that short spikes are good for performance but exceptionally tall ones are even better. That sounds like a contradiction.

Lower spike. I checked performance depending on which bottom of the horn was lower than the other. In bull markets, I didn't see any performance worth remarking on, but the bear market results say that when the left spike is below the right, performance improves. The median rise, regardless of which spike is lower, is 20% in bear markets. So a lower left spike sees a slight performance improvement, but a lower right spike hurts performance.

Price difference. I computed the difference between the two horn bottoms as a percentage of the breakout price. When the difference was greater than the median 1%, the horn tended to perform better after the breakout. In other words, look for horns with uneven bottoms for the best performance. That's especially helpful in bear markets.

I've seen this result in other double bottoms, where they outperform if the bottoms are uneven. It suggests the finding is reliable.

Experience

I haven't traded horn bottoms much, probably because I spend my life on the daily scales, not the weekly. **Figure 43.4** shows a trade I made in Michaels Stores (MIK) during the 2000 to 2002 bear market, on the weekly scale.

The horn bottom is at A, encompassing three price bars. Here are my notes for the buy: “30 March 2001. I bought using a limit order at 30 [not split adjusted]. Horn bottom is signaling an upswing. March is seasonally strong for the stock in last 5 years. I hope the market will turn around and send retailers higher. Also, horizontal trend of last 2 months [F] matches November–December 2000 trend [G]. MMU [measured move up] from October 2000 to February 2001 [H to I] means recent retrace is not an MMD [measured move down], but a retrace to MMU corrective phase [G]. I hope and expect stock to climb to 40 shortly.”

After price returns to the corrective phase (G) of a measured move up, there's a good chance price will resume the rise. Price retraced into the corrective phase at C before rebounding.

I bought at B and that was before confirmation of the horn. I got lucky and held on as price dropped to C before beginning its up move. It could as easily continued lower, especially because this was a bear market.

- Lesson: Wait for confirmation.

Price made a nice straight-line move higher, confirming the horn at D, and then turned sideways going into E. Here's what I wrote for the sale: “22 June 2001. I sold this morning. Stock shows signs of topping out. Weak volume on the top, matching prior top during January. Although the FED [Federal Reserve] is expected to cut interest rates next week, I think the cut will send the market lower. It might be for .25% instead of .5%, but market seems buoyant for some reason. I don't trust the feeling, believing the averages will go down more. The NASDAQ I think will retest the low. It has farther to fall.”

Figure 43.4 This horn bottom trade made 33% in a bear market.

I sold the stock at E for a 33% gain, so for a swing trade, I sold when the trend ended. In early July the stock was down 10% below my sale price, and in September the stock bottomed at 15% down.

In another trade, I bought a stock showing a horn in a downward price trend. Price climbed 8% after I bought and then continued lower after the release of bad earnings. I sold my shares for a loss soon after. That was the smart move because the stock continued lower, ending 74% below the lower of the horn spikes. Thank goodness I got out of that trade quickly.

- Lesson: Don't buy within 3 weeks of an earnings announcement (I didn't).
- Lesson: Do your homework to be sure you're taking a position in a quality stock, one that's waiting for a reason to move higher.

Sample Trade

Mary saw the horn bottom forming in the stock pictured in **Figure 43.5**. Price began climbing in early October 1992 at a low of 8.63. From that point, it soared to the current price in several waves. Waves pushing price higher took between 4 and 5 months, whereas those moving lower took 3 months.

When the horn formed, the 5-month up cycle was in progress; “That's what I hoped, anyway. The chart told me price would continue moving up. It certainly climbed above the right horn low [at 31], leaving the horn visible.”

She bought the stock the week after the horn completed at 35. She hoped the horn marked an end to the short retrace and price would resume its upward trend.

When price curled around, she placed a stop at 30.88—12 cents below the lowest horn low. “I didn't think it would be low enough, but a 12% loss was all I was willing to tolerate.”

In early December, the trade confirmed her worst fears. “I was stopped out when the stock plummeted from 33 to 29.” Three weeks later the stock hit bottom at 28.50 and turned around. From high to low, the decline lasted just over 3 months and measured 19%.

Price moved swiftly upward and topped out at 57, exactly double the 28.50 low.

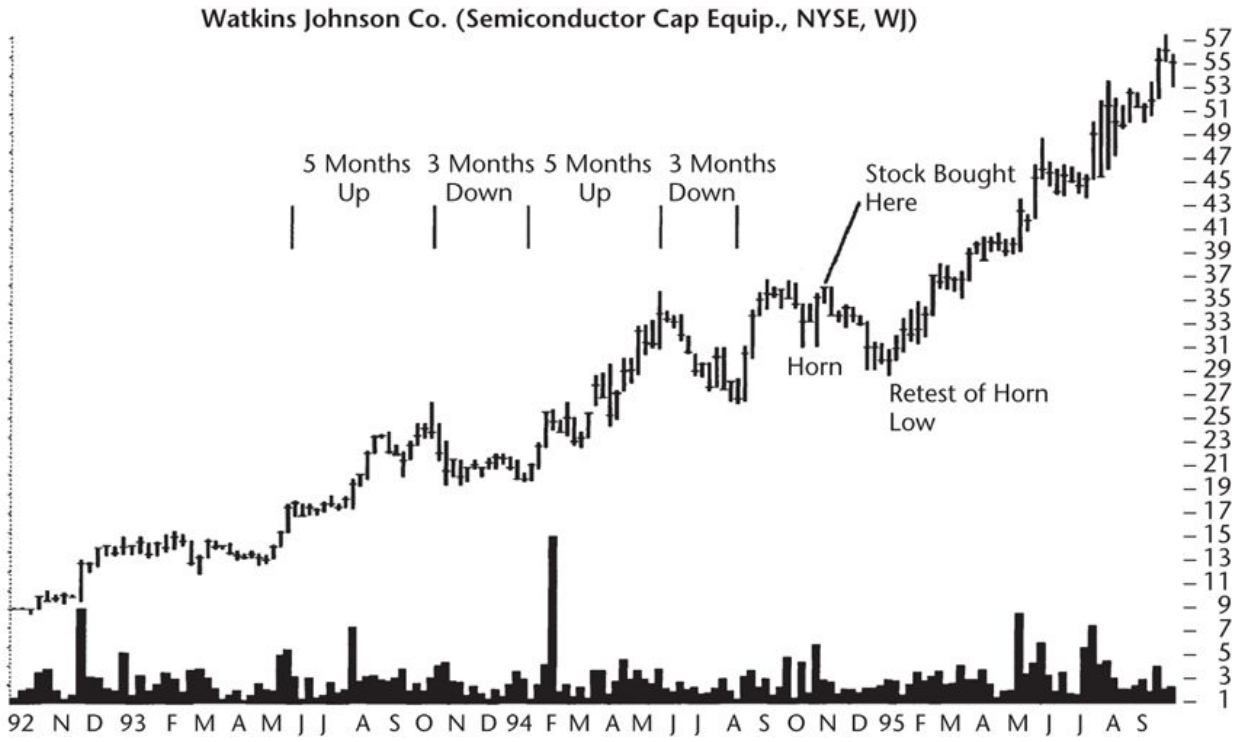
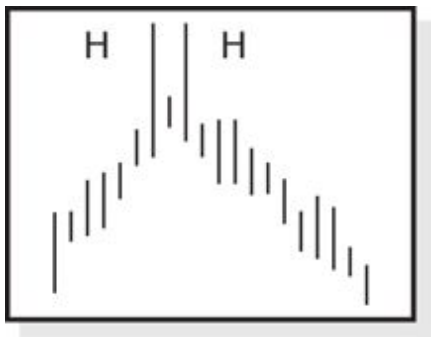


Figure 43.5 Horn bottom on weekly chart. As described in the Sample Trade, Mary was stopped out during the throwback just before price doubled.

“Did I sell too soon?” she asked me. Before I could answer, she said, “No. The last thing I want to do is start a bad habit where I bend the rules and win, and then get hammered with a huge loss. I sold when the trade went bad. Sure, I missed out on doubling my money, but there will always be another trade.

“What I'd like to know is how to improve what I did. Why did the stock drop four points? I'll find out and see if I can detect it coming the next time. Maybe I'll narrow the loss, too, by placing the stop closer.”

44
Horn Tops



RESULTS SNAPSHOT

Appearance: Two upward price spikes separated by a week on the weekly chart and looking like a horn.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	1 (best) out of 2	1 (best) out of 2
Breakeven failure rate	9%	3%
Average decline	19%	26%
Volume trend	Downward	Downward
Percentage meeting price target	54%	56%
See also	Double tops (all varieties of Adam and Eve), pipe tops	

Horn tops are rare, especially in bear markets (maybe because bear markets tend to be short). I find that discovery surprising for a bearish chart pattern, but that is what the numbers tell me. The pattern has a low failure rate with a decent decline.

Good news! The rank shows horn tops place first for performance. Bad news: The rank is based on just two types of chart patterns on the

weekly scale (the other is a pipe top).

The full height measure rule works about half the time, which I find disconcerting. Horns aren't tall patterns, so price should have an easy time dropping a pattern's height downward.

Tour

With many chart patterns, there is usually an inverted cousin: Double bottoms have double tops, for example. So it is with horn tops, the inverted variety of a horn bottom. Having discovered the bottoms, I wondered if the tops would work as well. Before we delve into the numbers, what do horn tops look like?

Figure 44.1 shows an example of a timely horn top. It sports twin peaks separated by a week and is commonly found near the end of an uptrend like that shown. Volume is usually heavy on both peaks but not by a huge margin above the average. After the right price spike, price drops lower and continues moving down, sometimes substantially.

In the figure, the stock begins its rise to the horn in mid-June 1993 at a price of 20.38. At the peak, price reaches a high of 32.63, a gain of 60% in 2 months. With such a sharp gain in so little time, a consolidation or congestion region is likely and expected. Instead, the horn top marks a change in trend. Combined with the earlier top, the double top (or even a triple top) pattern is a bearish signal.

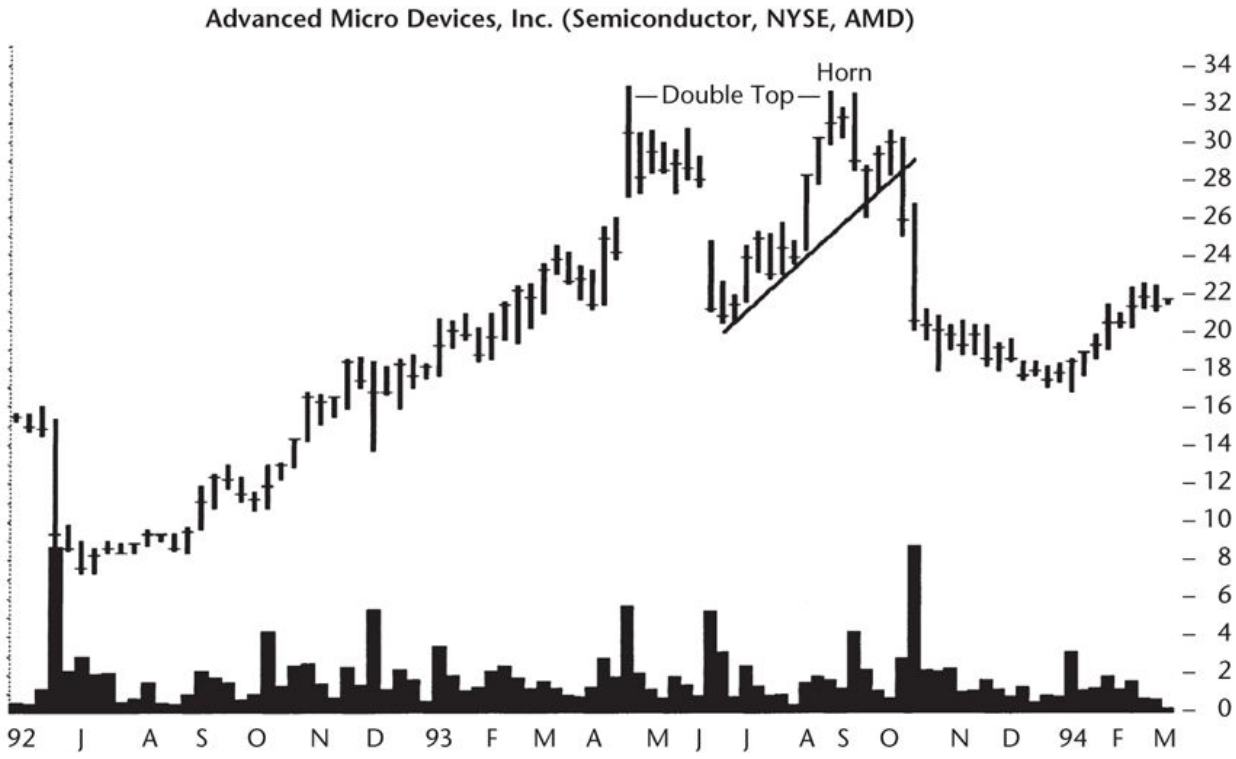


Figure 44.1 Horn top showing twin peaks. The stock drops almost in half after the horn top. Note the weekly time scale. The two peaks in April and August represent a double top.

After the twin peaks of the horn appear, price drops to 26, and then pulls back to the formation base, generally following an up-sloping trendline. Price heads down again. In the beginning of January 1994, price reaches bottom at 16.75 for a decline of almost 50%.

Identification Guidelines

Table 44.1 shows identification characteristics that make horn tops easy to recognize. Consider the horn shown in Figure 44.2.

Appearance. Use the weekly chart to facilitate identification. Yes, horn tops appear on the daily scales (and other scales, too), but performance is best on the weekly charts.

Look for twin price spikes that are separated by a week. The two spikes should tower above the surrounding landscape and be unusual in height (taller than other spikes encountered during the year). In the figure, you can see that the price spike in late September is the only real competition (for the period shown, anyway).

The tops of the horn's spikes need not peak at the same price, but the pattern looks way cool when they do.

Clear visibility. The two spikes should be well above the three adjacent price bars (before, middle, and after the horn). In an uptrend, if you look to the left, you should have clear visibility. Horn tops in downtrends (often as upward retraces in a downtrend) might find clear visibility to the left of the pattern harder to find. Be flexible for both trend directions. The point is this: You're looking for the horn peaks to stand out in a crowd of price movement.

Table 44.1 Identification Guidelines

Characteristic	Discussion
Appearance	Use the weekly chart and locate two upward price spikes separated by a week. The two spikes should be taller than similar spikes over the prior year and tower above the high of the center week. It should look like a horn.
Clear visibility	The horn highs should be well above the surrounding highs, and the best performing reversals appear at the end of a long uptrend.
Breakout direction	Downward.
Confirmation	The pattern becomes a valid horn top when price closes below the lowest low in the 3-week pattern.

Figure 44.2 Horn tops with unusually tall price spikes. This horn exceeds the clearance of an earlier spike.

Breakout direction. The breakout is always downward from a horn top. A pattern having an upward breakout (a close above the top of the pattern instead of below the bottom of it) is not a horn top.

Confirmation. Confirmation occurs when price closes below the lowest low in the 3-week pattern. Only when that happens does the pattern become a valid horn top. Do not trade a horn top without confirmation because price might continue rising.

Focus on Failures

There are a variety of reasons why a particular chart pattern fails (and most of them go unknown). Some break out upward and never look back (and aren't horn tops by definition), whereas others see price begin moving down, falter, and then climb significantly. The latter case, the so-called 5% failures, happen most often with horn tops, but are still rare. Price fails to continue down by more than 5% before recovering and heading higher.

Most horns warn about a coming decline by forming less than 2 months before a major turn. That finding is worth knowing. If a horn fails to call the turn in a stock you own, be alert to a possible trend change coming soon.

You can improve your investment performance if you consider the overall environment for the stock. Look at the horn top pictured in **Figure 44.3**. After trending down for a year, the stock pierced the down-sloping trendline, signaling a trend change, and price moved higher. Then the horn top formed.

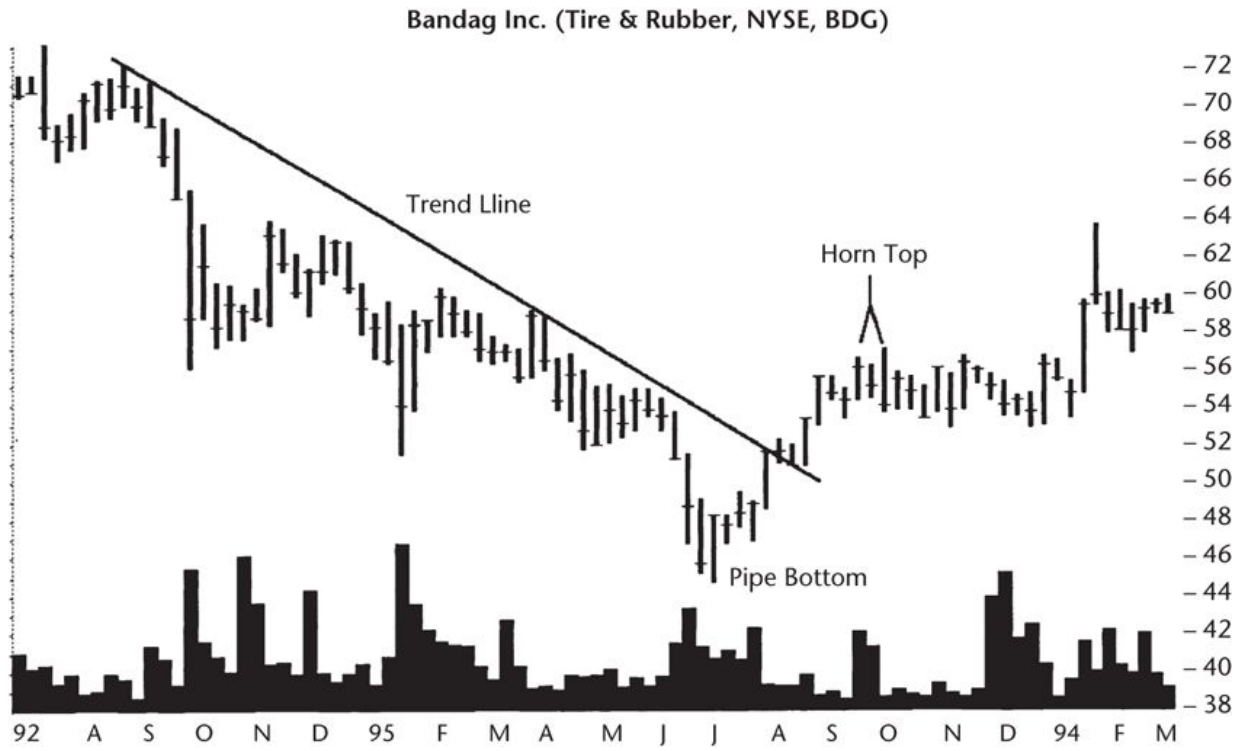


Figure 44.3 Horn top appearing after an extended downtrend. It is probably best to ignore such horn tops. A pipe bottom marks the turning point.

In situations like this, after a long downtrend, a stock usually bounces up, curls around, and retests the low, forming a double bottom (but not always, of course). So when the horn formed, it probably signaled the price top before the retest. That was a good omen, an opportunity to short the stock as price returned to the June low.

However, the stock stalled. It *did* confirm the horn top as a valid chart pattern, but the stock continued to move sideways. Obviously there was fundamental news to support the stock and keep it from dropping. What was that news? I have no idea, but the bulls and bears struggled for control of the situation. Eventually the bulls won, and their buying demand forced the stock upward.

If you had shorted the stock, a close above the top of the horn would have been the exit signal.

Sometimes I search the Internet to discover news that would account for a stock's behavior and come up empty. Someone wanted to buy the stock or someone wanted to sell it. Of course, for each trade, both of those are true: For every share sold one is bought. Price moves not

because buyers overwhelm sellers but because buying demand overwhelms selling pressure (or the reverse).

Failures happen. It's something that chart pattern traders have to deal with.

Statistics

Table 44.2 shows general statistics for horns.

Table 44.2 General Statistics

Description	Bull Market	Bear Market
Number found	843	325
Reversal (R), continuation (C) occurrence	100% R	100% R
Average decline	–19%	–26%
Standard & Poor's 500 change	–2%	–9%
Days to ultimate low	54	39
How many change trend?	36%	54%

Number found. I found the first horn in July 1991 and the most recent in September 2019, using 678 stocks to uncover 1,168 horns. Not all stocks covered the entire period and some no longer trade.

Reversal (R), continuation (C) occurrence. As a top, horns act as a reversal of the prevailing upward price trend by definition.

Average decline. The average decline is far higher than what we see on the daily charts, but that's expected. Weekly patterns, in the search for the ultimate low, ignore price closing above the top of the pattern during the week. Only the close at week's end is important, so the search for the ultimate low may continue further than it does on the daily scale.

Standard & Poor's 500 change. Both the bull and bear markets showed losses from the day of the horn breakout to the day of the ultimate low. That is unusual for bull markets, but it happens. It shows that the general market helped the stock move lower (the inverse of a rising tide lifts all boats).

Days to ultimate low. After the breakout, it takes between 2 and 3 months, on average, to reach the ultimate low, depending on market conditions. Since that is an average, your results will vary, but it suggests you need patience to reach the full potential of this chart pattern ... unless you're in a bear market.

Notice (you'll have to do the math to prove this) that the decline is almost twice as fast in bear markets as in bull ones.

How many change trend? This is a count of how often price drops more than 20% after the breakout. The two numbers slightly beat the averages of those on the daily charts.

Table 44.3 shows failure rates for horn tops with the bear market failure rates being smaller than the bull market ones. That finding should not come as a surprise because horn tops are bearish chart patterns.

How do you read the table? Let me give you a few examples. In bull markets, 30% of the patterns fail to see price drop more than 10%. Just about half (49%) fail to see price drop more than 15%.

Notice how the failure rate triples as the maximum decline moves from 5% to 10%. At 15%, the bear market failure rate has climbed to eight times the breakeven rate. Wow. If you think you're going to make a killing trading chart patterns, think again.

Table 44.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	74 or 9%	10 or 3%
10	183 or 30%	32 or 13%
15	155 or 49%	37 or 24%
20	125 or 64%	69 or 46%
25	80 or 73%	29 or 54%
30	72 or 82%	39 or 66%
35	47 or 87%	26 or 74%
50	85 or 97%	52 or 90%
75	22 or 100%	28 or 99%
Over 75	0 or 100%	3 or 100%

Table 44.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –20%, M –19%, H –17%	L –27%, M –26%, H –23%

Table 44.4 shows breakout-related statistics.

Breakout direction. By definition a horn top breaks out downward. A downward breakout happens when price closes below the lowest price bar in the 3-bar pattern.

Yearly position, performance. The best performing horn tops are those with breakouts near the yearly low. You'll want to avoid trading horn tops within a third of the yearly high because they perform worst. That makes sense: You should short a stock making new lows, not new highs (just think if the trend continues and you'll understand that).

Table 44.5 shows pattern size statistics.

Height. Since horns have a defined 3-week width, only height is important. I compared horns to the median height as a percentage of the breakout price and found that patterns taller than the median performed better after the breakout than did short ones. The performance difference is high enough that you might want to pay attention to this one. Give yourself an edge and trade only tall patterns for the best performance. And that's worth remembering for all chart patterns (taller is better).

Table 44.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–21%	–28%
Short pattern performance	–17%	–24%
Median height as a percentage of breakout price	13.95%	19.65%

Table 44.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	60% down	58% down
Rising volume trend performance	–19%	–28%
Falling volume trend performance	–19%	–25%
Heavy breakout volume performance	–20%	–27%
Light breakout volume performance	–18%	–26%

Table 44.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	4%	1%
Middle	22%	15%
Pattern bottom	69%	62%

Table 44.6 shows volume-related statistics.

Volume trend. Volume trends downward across the 3-bar pattern, but it's close to random. Does volume make a big difference for performance? Let's take a look.

Rising/Falling volume. In bear markets, horns with a rising volume trend outperformed those with a falling trend (a 12% improvement!). In bull markets, there was no performance difference.

Breakout day volume. Heavy breakout volume assisted performance in both bull and bear markets.

Table 44.7 shows how often price reaches a stop location on the journey to finding the ultimate low. For example, if you place a stop at the top of the horn (the taller of the two spikes), price will trigger the stop almost never. Keep in mind that after price reaches the ultimate low, it could rebound and trigger the stop. I only checked the decline until price found the ultimate low.

If you place the stop at the bottom of the pattern, you'll be stopped out about twice every three trades.

Table 44.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–19%
2000s	–17%
2010s	–19%
Performance (above), Failures (below)	
1990s	8%
2000s	11%
2010s	8%

Table 44.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	233 or 28%	39 or 12%
Single bust count	155 or 67%	22 or 56%
Double bust count	11 or 5%	4 or 10%
Triple+ bust count	67 or 29%	13 or 33%
Performance for all busted patterns	45%	24%
Single busted performance	67%	56%
Non-busted performance (horn bottoms)	59%	34%

Table 44.8 shows the performance over three decades. I like to see how the pattern has behaved over time (or misbehaved). Because bear markets only happened in the 2000s, they are not included in the statistics.

Performance over time. Performance has been constant across the three decades with the 2000s suffering more than the other two decades.

Failures over time. The failure rate is highest in the 2000s, which makes sense because it was the worst performing of the three decades.

Table 44.9 shows busted pattern performance.

Busted patterns count. Comparatively few patterns bust, especially in bear markets.

Busted occurrence. When horn tops bust, most of them will be single busted patterns. Oddly, triple (or more) busts come in second place. I've seen that trend in other chart pattern types, too. I try to justify it by knowing that triple+ means three or more busts, but do a lot of patterns bust four, five, or more times?

Busted and non-busted performance. I compared the performance of busted patterns with horn *bottoms*, which I used as a proxy for horn tops with upward breakouts.

Single busted horns outperform the other two types I studied ("all busted" horn tops, meaning single, double, and three or more busts, and "non-busted" horn bottoms).

The trick to getting such a large gain is to trade only single busted patterns. I haven't found a good way to determine that they will single bust, only that they do 67% of the time in bull markets.

Trading Tactics

Table 44.10 shows trading tactics.

Measure rule, targets. Compute the horn height by subtracting the lowest low from the highest high in the pattern. Subtract the height from the lowest low to get the target price.

How often does the measure rule work? The full height works about half the time as the lower portion of the table shows. You may wish to cut the height in half (or use another value) for a closer or farther target.

Table 44.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Subtract the lowest low from the highest high in the horn to get the pattern's height. To find the target, subtract the height from the lowest low. The lower portion of this table shows how often the measure rule works.
Threat assessment	Look for an uptrend spanning many months. Such uptrends often show horns near the end of the trend. If the horn top appears near the end of a long *downtrend,* then it is best to avoid it. Watch out for horns appearing after a downward trend when the trend changes and price starts moving higher (an upward retrace in a downtrend). Price may decline, but the decline is usually short-lived (as in the rise between a double bottom).
Trend change	A horn top usually signals an approaching trend change, often in less than 2 months.
Stop location	Use Table 44.7 for help with stop placement.
Busted trade	Single busted horn tops show good performance. See Table 44.9.
Tips	See text.

Description	Bull Market	Bear Market
Percentage reaching half height target	81%	83%
Percentage reaching full height target	54%	56%
Percentage reaching 2× height	23%	23%
Percentage reaching 3× height	11%	12%

For example, say a horn has a high price of 10 and a low of 9, for a height of $1. Subtract the height from the low to get a target of 8. A $1 decline in a stock with a breakout price of 9 means an 11% decline. (Let's pretend the decline is an even 10%.) Table 44.3 says that over 30% of horn tops in bull markets will fail to see price drop more than

10%. That means if you trade it perfectly, there's a 70% chance price will decline at least 10%. That's good to know.

Threat assessment. After you have correctly identified the horn, look at the surrounding price pattern. Is the stock trending higher and has it been moving higher for months now? If so, then the horn may signal an approaching top. Sometimes the horn calls the turn exactly while at other times it is off by a few months (usually it precedes the turn, but sometimes it lags).

If the horn appears in a downtrend, that is fine. The horn is simply implying that the trend will continue down. However, should the horn appear after an extended downtrend, then the possibility of further declines may be in jeopardy.

This behavior is especially true if the horn appears after a long downtrend when price is beginning to move up again (when it retraces some of its losses). Often the retrace signals a trend change. You will be buying into a situation in which you believe price will fall and retest the low, but price will dip slightly and then head higher.

Be cautious when selling short after a long downtrend, and be especially cautious if the downtrend has ended and the horn seems to mark the end of an upward retrace. Do not expect price to fall far. It does occasionally, but the majority of the decline has already passed.

Trend change. Even if a horn top fails to see price drop by more than 5%, there is a chance that the horn is a premature signal of a bearish trend change. Therefore, whenever you see a horn top, be aware that the end of an uptrend may be just a few months away.

Stop location. The discussion associated with Table 44.7 describes where to place a stop. Be sure to convert the potential loss into a percentage of the breakout price. Can you tolerate such a loss?

For example, if you place a stop $2 above the current price of $10, that's a potential 20% (100 × 2/10) loss. Many traders like to limit losses to 8% or less, so you may want to rethink the stop location.

Busted trade. A single busted pattern might be a good way to make some big bucks. Although you won't be able to tell that a horn top will single bust before you trade it, you'll be right 67% of the time in bull markets on average.

Place a buy stop a penny above the top of the horn and ride price higher. In bull markets, the average gain of a single busted pattern is 67% (from Table 44.9).

Tips. I only have a few tips to share with you. I've written that you should avoid shorting stocks making new highs and go for those making new lows. However, horn tops seem to fail a lot down there (near the yearly low or even a multiyear low).

I checked the statistics, and they say I'm crazy. Horns within a third of the yearly low fail 6% of the time. Those near the yearly high fail twice as often: 12% of the time. The middle third comes in at 9% failing.

Maybe we're both right. Price drops more than 5% but then recovers, leaving not much profit behind if you trade it perfectly. And if you're a mere mortal, then forget about making money. Do your own research to check if my notion is right or wrong.

- Short stocks making new lows, not new highs, but horns may not work as well down there.

I have noticed that for swing trades, you only make a little profit when you're right and shooting for a nearby support area. If the trade goes against you, with a stop at the top of the horn, it's painful, meaning the loss is so much larger than the potential profit. So do check the size of the potential profit versus the size of the potential loss. If the ratio is yucky, then don't trade it or adjust the stop location.

- Check the potential profit versus loss before trading to see if it's worth the risk of a trade.

When horn trades work, they tend to do so quickly. Down price goes. When they fail, they can do so immediately. However, if I see price starting to move sideways (often for weeks to months), that tells me the trade is going to be a loser. Exit immediately.

- If price moves sideways (often for weeks or months), the trade is more likely to fail.

Table 44.11 shows special features of horn tops.

Spike height performance. I determined the height of the spike from the lower of the two horn spikes to the higher of the adjacent three weeks (week before the left horn spike, middle week, and week after the right horn spike). I compared that height to the average spike height for the stock over the prior year. For those horn spikes shorter than their average, the median performance in bull markets was a drop of 16%. Spikes taller than their average showed losses of 15%. For those patterns with horn spikes at least twice the average height, they performed even worse, as the table shows.

The taller the spike the worse the performance.

Price difference. I looked at the price difference between the two highs in the horn top and compared it to the median for all horn tops. When there was a large price variation (above the median 1%), the horn performed better after the breakout. So look for horns with uneven tops.

Table 44.11 Special Features

Description	Bull Market	Bear Market
Spike height shorter than average, median performance	–16%	–23%
Spike height taller than average, median performance	–15%	–22%
Spike height twice the average, median performance	–14%	–18%
Median horn difference as percentage of breakout price	1%	1%
Difference > median, median performance	–20%	–28%
Difference <= median, median performance	–17%	–25%

Sample Trade

Consider the situation Doug faced in **Figure 44.4**. When the stock broke out of a congestion region in late 2016 (E, looking like a symmetrical triangle), he bought the stock and received a fill of 20.22 in early November.

In December 2019, the stock made another peak, but it was below the prior ones made since late 2017 (the three highest peaks on the chart). The stock looked tired. From September 2017 until 2020, the stock had moved sideways to down during that time. That sideways move is common for stocks that need a rest after having made big moves upward.

In this case, the stock almost tripled off the January 2016 low of 12.62. “I thought the stock had entered a coma.”

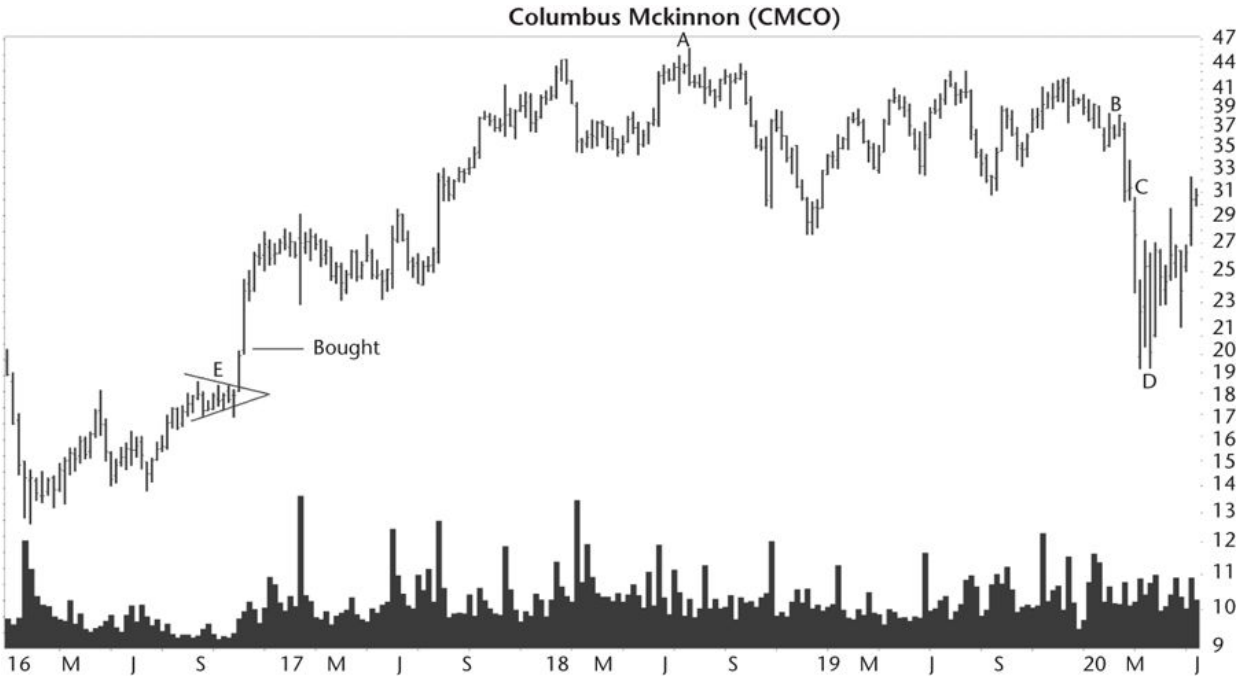


Figure 44.4 Two horn tops and Covid-19 convinced Doug to sell his holding during the bear market drop of 2020.

In the early months of 2020, he heard about the Covid-19 virus spreading across the world and he studied the implications. “I didn't like what I learned.”

When the horn top appeared at B, he wasn't too concerned. Covid-19 was getting worse, but the stock market was holding up just fine and

so was his stock.

He looked back at the historical price chart (weekly scale) and found another horn top at A. This one formed a double top. Visibility to the left of the pattern was clear compared to the one at B where the stock was already trending lower. The A pattern correctly predicted a drop that turned into a decline of 13 points, or 32% below the bottom of the horn (approximately).

“The horn top at B looked to be saying the same thing, that the drop would continue.” Indeed, the stock started dropping the week of the breakout and plunged from about 38 to 31 in a week.

That big drop combined with dying from Covid-19 and the possibility of being unemployed for months convinced him to sell his position and use some of the profit to buy toilet paper (people in the United States hoarded the stuff).

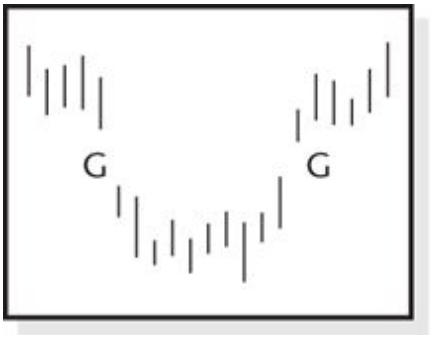
When the stock opened at C, he sold his stock. He received a fill at 31 and change (for a profit of 54%) and watched the stock drop to a low of 19.20 in mid-March (D), a 38% plunge below his sale price. Price started to recover, and what did his eyes reveal?

A horn bottom.

“I struggled with wanting to buy the stock, but thought a second bottom would happen when the markets realized that the virus might be worse in the fall and that unemployment claims would skyrocket again.”

He overcame his fear and knew a good buying opportunity when he saw one. He decided to buy the stock. He received a fill at 26.40, two weeks after the right horn bottom. The stock is currently at about 36, and the general market is racing higher.

45
Island Reversals



RESULTS SNAPSHOT

Appearance: Price has two gaps at the same price level with price movement between the two gaps, creating and separating the island from the mainland.

Island Tops (Downward Breakouts)

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	31 out of 36	12 out of 19
Breakeven failure rate	34%	14%
Average drop	13%	22%
Volume trend	Downward	Downward
Pullbacks	55%	58%
Percentage meeting price target	62%	61%

Island Bottoms (Upward Breakouts)

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Short-term bullish reversal
Performance rank	38 out of 39	20 (last) out of 20
Breakeven failure rate	31%	30%
Average rise	31%	20%
Volume trend	Downward	Downward
Throwbacks	54%	52%
Percentage meeting price target	82%	75%

The performance of island reversals is dreadful. Island bottoms in bear markets place last, and bull markets aren't much better (next to last). Island tops are close to the bottom of the performance list as well.

Failure rates for island bottoms rank last (worst). Island tops are also near the bottom of the list.

With performance such as this, trading every island that you see is a way to drown in losses. You can improve performance by selecting patterns with the proper height and width characteristics for the market you are trading, as described later in this chapter, but you might want to skip trading this pattern altogether.

Let's take an island tour to see some examples.

Tour

Figure 45.1 shows what island reversals look like. The first island, shown on the far left, is a one-day reversal. In the study of islands, I did not tabulate such narrow patterns, but the figure shows an example of a small reversal.

The pattern to the right of the one-day reversal is an island bottom. Price gaps down in mid-September, reaches a new low in early October, and then gaps up later in the month. The two gaps appear at about the same price level, 11.50. From that point, price climbs quite rapidly and reaches a high of 21.50, well above the 11.25 price posted the day before the breakout. Notice that the breakout is on very high volume.

The last island highlighted on the chart is near the top. It is an island top, and price moves down from about 20 to less than 8. This pattern is a traditional island top because of its compact size. I did not count it in my tabulations because the gap on the right is less than the 25 cents I used to filter out such patterns. Still it does emphasize a trend reversal with excellent timing.

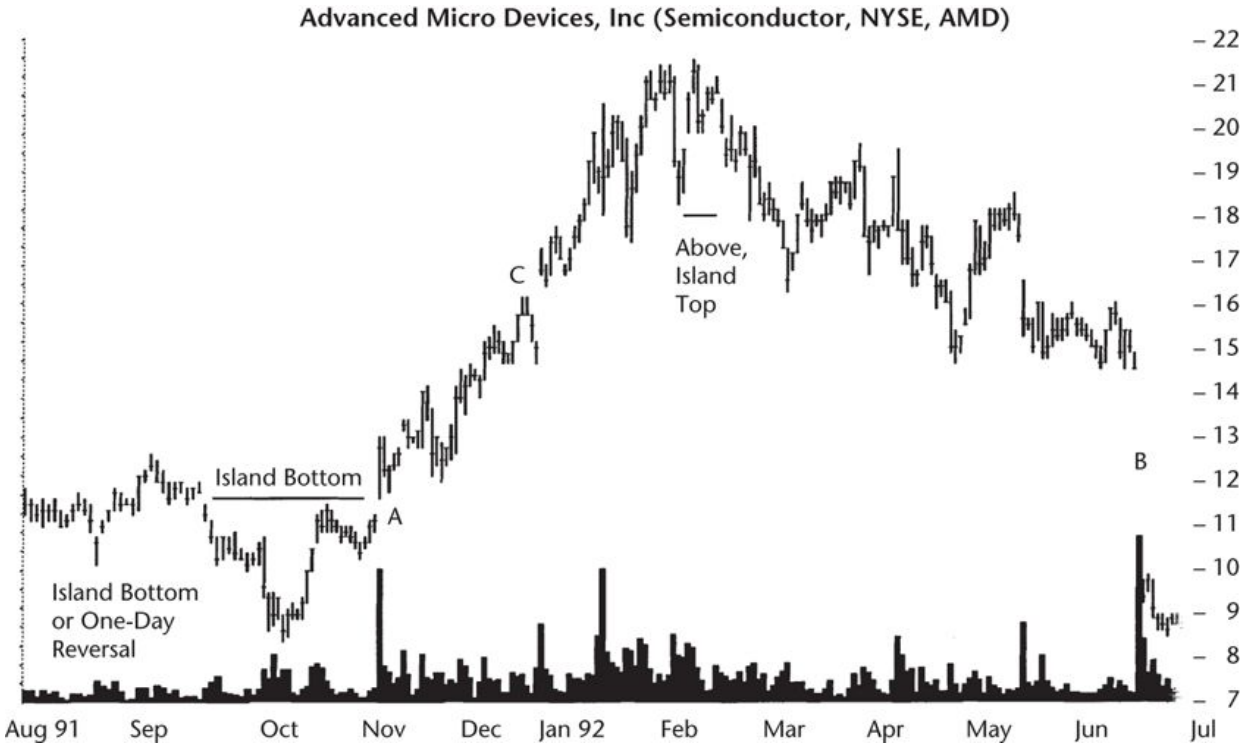


Figure 45.1 A one-day reversal, island bottom, and island top. You can see the price change that results after each reversal.

Not highlighted is a very large island top. The island starts at point A while a matching right gap is the large price decline in mid-June (point B). The island is almost 8 months long.

Identification Guidelines

Island reversals are easy to identify, and **Table 45.1** shows the identification characteristics.

Appearance. Both types of reversals, tops and bottoms, are set off by gaps. The gaps appear at or near the same price level but are typically not the same size. The large breakaway gap marked as point B in Figure 45.1 (on the far right) makes this clear. That gap is almost $5 tall while the one on the left (point A) is only 38 cents tall.

As far as identification goes, the gap in mid-December 1991 (point C) should not be paired with the gap in late October (point A) since they do not share a common price. Even though the price pattern looks like an island because it is set off by gaps, it is not an island reversal by the traditional definition. The gaps must overlap price or be quite close to one another. In this study, all islands have price gaps within 13 cents of one another and are at least 25 cents or larger. In addition, I did not consider one-day reversals (islands composed of 1 day) as part of this study. I believe that such islands are too difficult on which to base an effective trading policy.

Price trends. Consider **Figure 45.2**, which shows several island reversals. The first two islands on the left happen as part of a quick retrace in a longer downtrend. The small island tops last for about a week before price resumes its downward move.

Table 45.1 Identification Guidelines

Characteristic	Discussion
Appearance	Gaps set off both island tops and bottoms and share all or part of the same price level. Most times, price moves away from the gaps, leaving the island with a clear view of the opposing gap.
Rising trend	Island tops have price that leads up to the left gap and falls away from the right gap.
Falling trend	Island bottoms have price that leads down to the left gap and rises away from the right gap.
Volume	Volume is usually high on the breakout day (the day price makes a second gap and forms the island) but need not be.
Breakout direction	Tops break out downward; bottoms break out upward.
Duration	The island can be from 1 day (a 1-day reversal) to several months long. Some analysts have suggested that islands are quite short, up to a week or two, with relatively flat price movement, but I placed no such restrictions on them.

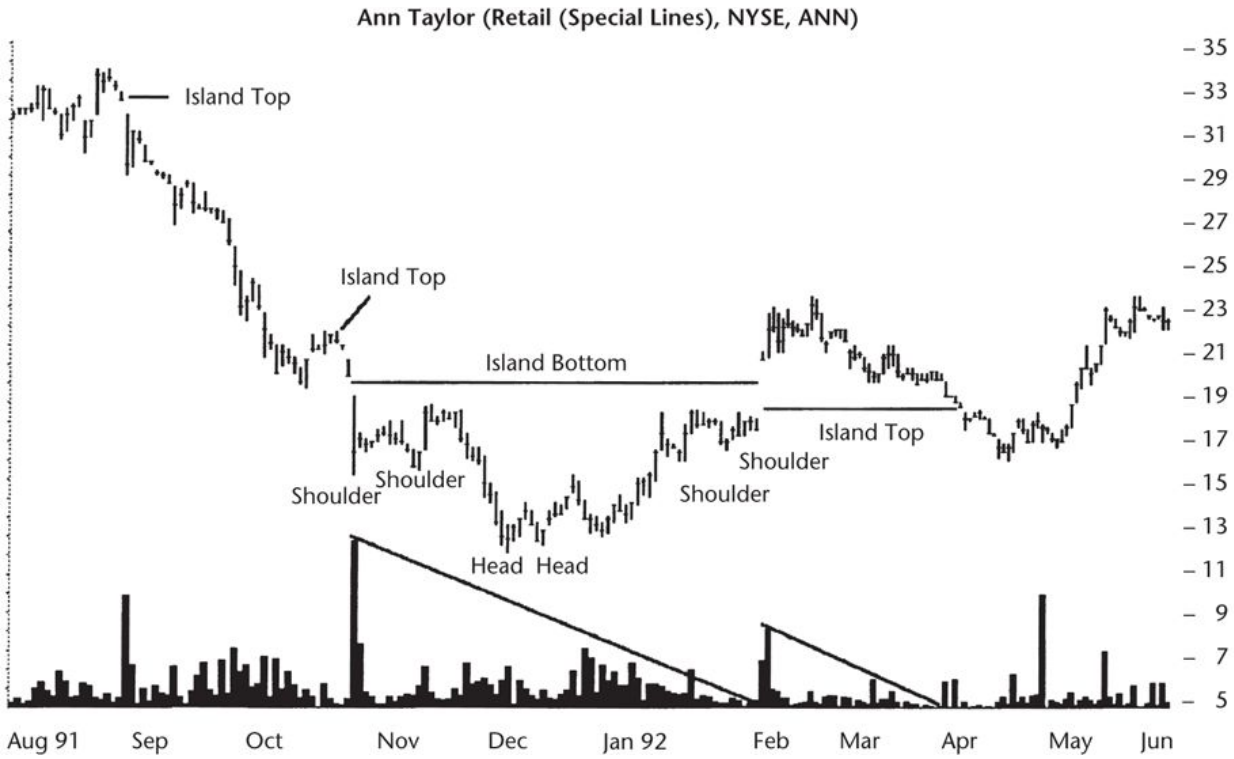


Figure 45.2 Several island reversals, some with short durations and some with longer durations. The island bottom is also a complex head-and-shoulders bottom that retests the neckline in April.

The wide island bottom forms after an extensive decline that sees price drop from a high of 36.50 to 12.00 in less than 5 months. The exhaustion gap occurs on very high volume (the highest on the chart), and price that day has a very tall trading range. The gap remains open until price gaps upward in late January.

The island bottom looks like a complex head-and-shoulders bottom. Marked on the figure are dual shoulders and two heads. Volume for the head-and-shoulders pattern is what you would expect: highest on the left shoulder, diminished on the head, and quite low on the right shoulder. Only after price gaps upward does volume spike higher for 2 days before recovering and trending downward.

The island top on the right of the figure is somewhat difficult to spot because of the large gap on the left that matches the small one on the right. It only takes a few days for price to reach its high before easing down. When price gaps lower at the end of March, volume does not budge.

Volume. Volume usually trends downward over the length of the pattern from gap to gap. Breakout day volume on the second (right) gap tends to be heavy, but be flexible. Don't discard a pattern because it has an unusual volume trend.

Breakout direction. By definition, island tops break out downward and island bottoms break out upward. The breakout occurs at the second, right, gap.

Duration. The average length for an island is 2 to 3 weeks long, but it can vary from a single day to a year. Islands too long may be difficult to spot. If traders do not recognize a pattern, then they will not trade it. Stick with obvious islands, usually of short duration (say, up to 3 months).

Focus on Failures

Failures come in all manners of depiction. Look at **Figure 45.3**, a chart of a large island top. The island is unusual because it forms after a region of consolidation (shown as the sideways move from October to December). The first gap is a breakaway gap since it breaks away from the consolidation region on high volume and price moves up. The second gap is an exhaustion gap that closes quickly and ends the downtrend.

The figure shows a 5% failure. Price heads lower after the second gap on the right, but declines by no more than 5% before recovering and moving substantially higher. Why? There is a common law, for lack of a better term, that says price has to have something to reverse. In Figure 45.3, you can see that price consolidated for 2 months (end of 1993). When the island top appeared, what was there to reverse? The rise from December to mid-February, when price climbed from roughly 55 to 65, unwound on the decline going into the right gap, leaving the stock where it started the island. Beyond that, the prior year's worth of support at that level (not shown) was too extensive to allow any further decline.

There has to be something to reverse. Remember that before you take a position in a stock, especially something such as an island reversal that is known to be light on performance.

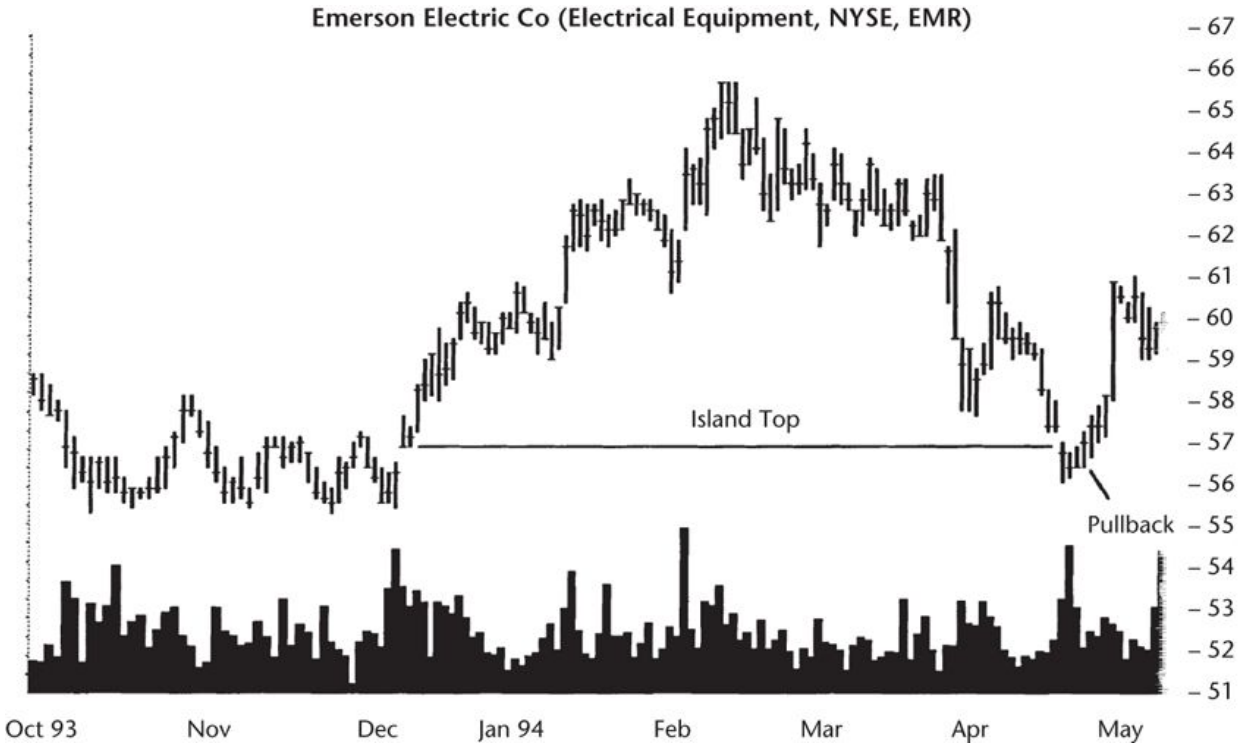


Figure 45.3 Long island top that fails because price drops by less than 5%. A reversal needs something to reverse.

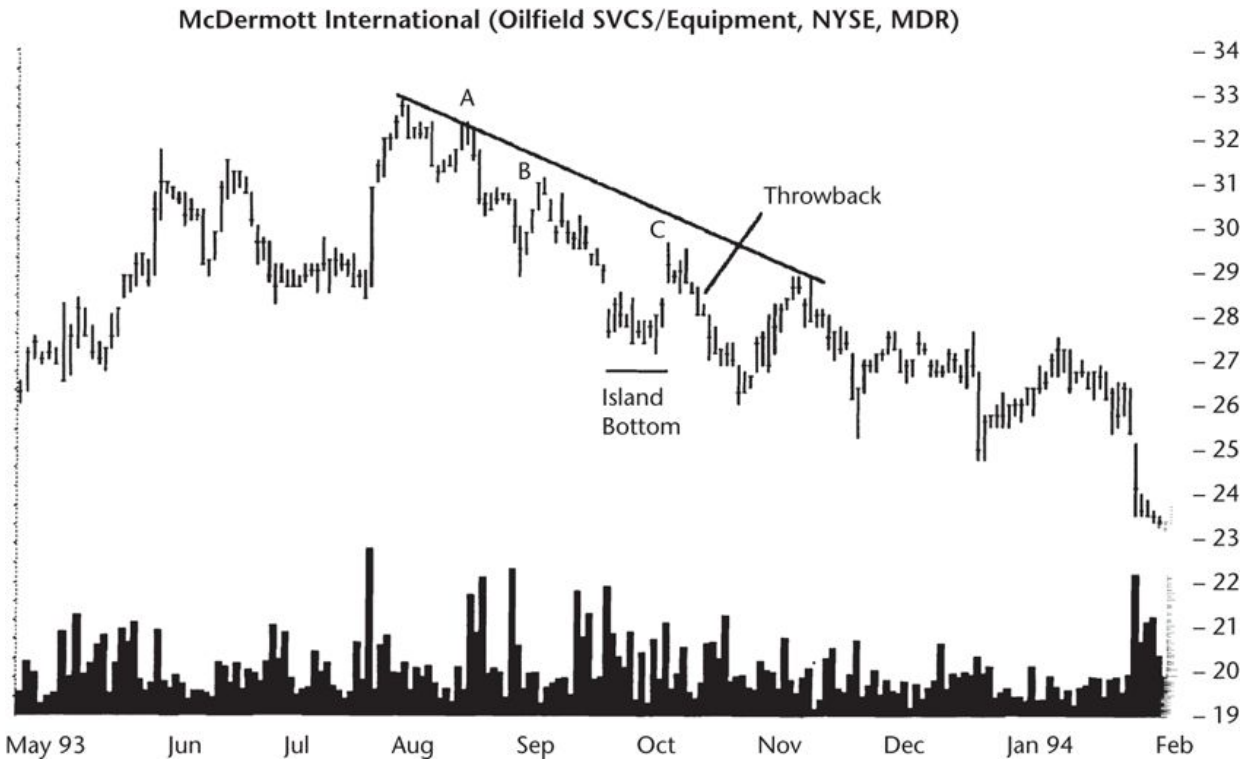


Figure 45.4 An island bottom failure. Wait for price to close above the trendline before investing in this island bottom. Since it does not (at point C), skip this trade.

Figure 45.4 shows another failure. The island bottom is clearly visible on the chart. The two gaps separate the main body of the island from the mainland with plenty of clear ocean. Over the course of the pattern, the first gap remains open. The second gap closes about a week after price throws back to the breakout point. Then price continues lower.

How could you have known that this island bottom would rise less than 5% before sinking?

See that trendline I drew down from the peak on the chart (touching point A)? That would scare me out of taking a position in this situation. I recall considering buying Southwest Airlines in a similar situation and deciding not to because of trendline resistance. Price moved upward, hit the trendline, and turned down. So I made the right choice to walk away from buying the stock.

In the figure, price threw back to the breakout price and continued lower.

Even if you chose another trendline, connecting peaks B and C, the result was the same. Price neared or touched the trendline before reversing.

We've taken a tour. We've discussed failures. Let's talk numbers now.

Statistics

Table 45.2 is swimming with island statistics.

Number found. I found 2,504 islands without really trying. My selections were limited to gaps at least $0.25 in size and no more than $0.13 away from each other in price (gap to gap overlap). I found them in 960 stocks (about half that for tops and half that for bottoms) from July 1991 to December 2019. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. By definition, all patterns acted as reversals of the preceding trend. That means tops broke out downward and bottoms broke out upward, changing the trend from up to down (island tops) and down to up (island bottoms).

Average rise or decline. The best performance came from upward breakouts in bull markets and downward breakouts in bear markets, so trade this pattern with the prevailing market trend. Going against the market is like trying to cross a six-lane highway on foot: It is possible but dangerous.

Table 45.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	1,166	182	975	181
Reversal (R), continuation (C) occurrence	100% R	100% R	100% R	100% R
Average rise or decline	31%	20%	–13%	–22%
Standard & Poor's 500 change	12%	2%	–3%	–9%
Days to ultimate high or low	196	46	47	36
How many change trend?	39%	32%	21%	48%

Standard & Poor's 500 change. From the breakout of the island to the ultimate high or low, the S&P ranged from a 12% climb to a 9% drop. Notice how the numbers track the average rise or decline. I mean that the largest rise associates with a large general market gain, and the largest decline (bear market, down breakout) associates with the biggest decline in the S&P. This connection suggests you should trade with the prevailing market trend. Go long in bull markets and short in bear ones.

Days to ultimate high or low. Patterns in bull markets with upward breakouts took more than four times as long as the other combinations to reach the ultimate high.

I compared the rise (upward breakouts) in bull and bear markets. I found that the bear market rise of 20% in 46 days was 2.7 times as fast as the 31% bull market rise in 196 days. Downward breakouts showed that the bear market drop was 2.2 times as fast as the bull

market drop. In other words, price velocity is substantially higher in bear markets, regardless of the up or down direction.

How many change trend? I counted how many patterns saw price rise more than 20% after the breakout. For upward breakouts, I like to see values above 50%. Neither of the first two columns in the table comes close. Of course, we know that islands don't perform well, and this is more proof.

For downward breakouts, I don't have a benchmark in mind, but 48% is a good value.

Let's talk about failure rates next, in **Table 45.3**, starting with an example. In bull markets after upward breakouts from island bottoms, I found that 31% of the chart patterns failed to see price rise more than 5%. Nearly half, 46%, failed to rise more than 10%. No offense, but that's awful.

Table 45.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	362 or 31%	54 or 30%	329 or 34%	25 or 14%
10	177 or 46%	35 or 49%	210 or 55%	24 or 27%
15	101 or 55%	24 or 62%	139 or 70%	30 or 44%
20	72 or 61%	11 or 68%	93 or 79%	15 or 52%
25	66 or 67%	9 or 73%	59 or 85%	16 or 61%
30	51 or 71%	4 or 75%	45 or 90%	18 or 71%
35	41 or 75%	11 or 81%	32 or 93%	14 or 78%
50	94 or 83%	18 or 91%	51 or 98%	28 or 94%
75	82 or 90%	12 or 98%	16 or 100%	11 or 100%
Over 75	120 or 100%	4 or 100%	1 or 100%	0 or 100%

For downward breakouts, read the table the same way. In bear markets, 14% of island tops failed to see price drop more than 5%

after the breakout. This is the lowest failure rate of the bunch. Over half (52%) failed to see price drop more than 20%.

Notice how the failure rates climb in each column, quickly doubling or tripling the breakeven rate. This progression is common for chart patterns. It suggests that good performers are hard to find, so you need every break you can get. That is why things like trading with the market trend, using stops, and selling at a profit when the stock, industry, and general market begin showing weakness can spell the difference between a millionaire trader and a homeless one.

Table 45.4 shows breakout-related statistics.

Breakout direction. Island bottoms have upward breakouts all of the time. Island tops have downward breakouts all of the time, so that's why you see the 100% values in the columns.

Table 45.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	100% up	100% up	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 34%, M 28%, H 32%	L 18%, M 25%, H 14%	L –14%, M –13%, H –11%	L –21%, M –23%, H –22%
Throwbacks/pullbacks occurrence	54%	52%	55%	58%
Average time to throwback/pullback peaks	5% in 9 days	9% in 10 days	–6% in 8 days	–11% in 9 days
Average time to throwback/pullback ends	14 days	15 days	14 days	15 days
Average rise/decline for patterns with throwbacks/pullbacks	31%	20%	–12%	–22%
Average rise/decline for patterns without throwbacks/pullbacks	31%	19%	–13%	–23%
Percentage price resumes trend	62%	47%	53%	49%

Yearly position, performance. Bull markets prefer patterns with breakouts within a third of the yearly low. Bear market patterns perform best if the breakout is in the middle of the yearly high–low price range. In most cases, you will want to avoid trading islands within a third of the yearly high. They perform worst, but every situation is different, so use your best judgment.

Throwbacks and pullbacks. Throwbacks and pullbacks occur about half the time. Price trends for 8 to 10 days before returning to the breakout price in a round-trip excursion lasting about 2 weeks. For other chart pattern types, the round-trip is quicker, about 11 or 12 days, peaking after about half that.

Usually if a throwback or pullback occurs, performance suffers. With islands, the performance varies, and it's tiny or nonexistent anyway. In other words, you may not see a difference in performance.

After a throwback or pullback completes, price resumes the breakout direction only about half the time (the exception: 62% of the time for island bottoms in bull markets).

Table 45.5 shows pattern size statistics.

Table 45.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	33%	22%	–15%	–21%
Short pattern performance	30%	17%	–10%	–23%
Median height as a percentage of breakout price	5.2%	9.6%	5.6%	10.4%
Narrow pattern performance	28%	20%	–11%	–23%
Wide pattern performance	35%	19%	–15%	–21%
Median width	6 days	6 days	6 days	6 days
Short and narrow performance	28%	18%	–10%	–23%
Short and wide performance	39%	11%*	–11%	–24%
Tall and wide performance	34%	21%	–16%	–21%
Tall and narrow performance	32%	29%*	–14%	–22%*

* Fewer than 30 samples.

Height. I hoped that all columns would show tall patterns outperforming short ones, and that's true except for downward breakouts from island tops in bear markets. To determine short or tall, I measured the height of each island and divided by the breakout price. Tall patterns had results greater than the median shown in the table.

Width. The results for width follow market conditions. Wide islands performed best in bull markets. Narrow islands did well in bear markets. I measured width from gap to gap, as you might expect, and all comparisons are against the median widths shown in the table.

Height and width combinations. Because bear markets have few samples when split into up or down breakouts and four combinations of height and width, let's ignore them.

Upward breakouts show the best performance if the pattern is both short and wide. That's odd because tall patterns usually do better than short ones. Downward breakouts behave with tall and wide patterns outperforming, just as their individual traits predict.

Table 45.6 shows volume-related statistics.

Volume trend. Island tops and bottoms have a downward volume trend, as measured between the two gaps. The receding trend agrees with most other chart pattern types.

Rising/Falling volume. In all columns, patterns with a rising volume trend outperform those with a falling volume trend. The performance differences are pronounced for island bottoms (upward breakouts).

Breakout day volume. Heavy breakout volume tends to push price along the breakout direction more than light volume, except in bear markets after downward breakouts (which prefer light volume).

Table 45.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	79% down	79% down	74% down	74% down
Rising volume trend performance	41%	27%	–14%	–23%
Falling volume trend performance	32%	19%	–13%	–22%
Heavy breakout volume performance	34%	22%	–13%	–22%
Light breakout volume performance	26%	13%	–12%	–24%

Table 45.7 shows how often price reaches a stop location.

I'm surprised that the hit rate for stops is as low as it is (36% to 48%, depending on breakout direction). Often we see rates about 70% for other chart pattern types.

Gaps, however, are known support and resistance areas (but weak ones). Maybe the combination of a dual gap sharing a common price improves the strength. For whatever the reason, the numbers are what they are.

For example, if you have an island bottom (upward breakout), price will return to the pattern's top 42% to 48% of the time as it searches for the ultimate high. Similarly, a stop placed at the bottom of an island top will trigger between 36% and 43% of the time as price looks for the ultimate low. Once price finds the ultimate high or low, I stopped checking to see if a trade was stopped out, so price might have returned to the pattern thereafter and snagged the stop.

Table 45.8 shows the performance over three decades. Because bear markets only occurred in the 2000s, they are excluded from the presentation and the statistics.

Performance over time. Upward breakouts (island bottoms) show better performance over the decades, and downward breakouts (island tops) get worse. That's weird, isn't it? *Hmm*. I guess it makes sense that one direction would suffer if the other was outperforming.

Table 45.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	48%	42%	7%	6%
Middle	22%	13%	21%	12%
Pattern bottom	8%	5%	43%	36%

Table 45.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	26%	–15%
2000s	28%	–13%
2010s	34%	–12%
Performance (above), Failures (below)		
1990s	30%	30%
2000s	23%	31%
2010s	33%	36%

Failures over time. Downward breakouts show failures increasing over the decades, but upward breakouts are mixed. Clearly, though, failures are higher in the 2010s than in the prior two decades.

Table 45.9 shows busted pattern performance.

Busted patterns count. I expected more islands to bust. A bust occurs when price breaks out in one direction and moves no more

than 10% before reversing and closing outside the opposite end of the pattern (for a downward breakout, price would close above the pattern's top).

Busted occurrence. There's not a lot of bear market patterns, so let's not discuss those. In most chart pattern types, single busted patterns happen a lot, with no competition from double or triple busts. With islands, that's not the case. In a bull market, downward breakouts, for example, show three or more busts (triple+) as happening most often followed closely by single busts.

Busted and non-busted performance. My usual guidance is to trade single busted patterns if you can find them. However, with islands, the chart pattern is more risky because single busts tend to be rarer than usual and the performance is lacking anyway. I'd look for another pattern type rather than try to trade a busted island.

Trading Tactics

Table 45.10 shows trading tactics. With performance so poor, my main question is, why would you want to trade an island? Are you bored of living? Have too much money and can't give it away? Do you know what I hate? Rhetorical questions.

Let's talk about tactics.

Table 45.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	390 or 33%	46 or 25%	378 or 39%	24 or 13%
Single bust count	150 or 38%	33 or 72%	179 or 47%	10 or 42%
Double bust count	142 or 36%	9 or 20%	18 or 5%	2 or 8%
Triple+ bust count	98 or 25%	4 or 9%	181 or 48%	12 or 50%
Performance for all busted patterns	–14%	–14%	22%	17%
Single busted performance	–21%	–18%	42%	42%
Non-busted performance	–13%	–22%	31%	20%

Table 45.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height by subtracting the lowest low from the highest high in the island. Add the difference to the highest high for island bottoms, and subtract the difference from the lowest low for island tops. The result is the target to which price should rise (for bottoms) or fall (for tops). The bottom portion of the table shows the success rate of the measure rule using various heights.
Watch trendlines	Trendlines, when pierced, can signal a trend change. Should an island reversal appear near a trendline, wait for price to close beyond the trendline before investing.
Tips	See text.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	94%	91%	81%	80%
Percentage reaching full height target	82%	75%	62%	61%
Percentage reaching 2× height	63%	42%	39%	40%
Percentage reaching 3× height	50%	29%	26%	31%

Measure rule, targets. The table describes how to use the height of the pattern and add the height to upward breakouts or subtract it from downward breakouts to get a price target. If the downward

target is below zero, then ignore it. Similarly, large percentage changes probably won't happen either, so use common sense.

The bottom portion of the table shows how often the rule works. For example, if a pattern has a high price of $10 and a low of $9, that's a height of $1. For upward breakouts, the target would be $11 and the downward breakout target would be $8. Using the full height would work between 61% and 82% of the time. For a closer target, take half of the height to get a close target of 10.50 or 8.50, in our example. Price reaches the target between 80% and 94% of the time, on average.

Let's apply the measure rule to Figure 45.5. The highest high in the island bottom is 24.63 (which is just below the gap in early February, not the larger gap in mid-February) while the low is 17.50. Add the difference of 7.13 to the highest high to get the predicted price target for an upward breakout. In this case, the target is 31.75, a target not reached before the formation fails.

As a check, divide the distance to the target by the current price and check Table 45.3. In our example, the target is $1 away from $10, or 10% (let's assume an upward breakout in a bull market).

Table 45.3 says that 46% of the patterns will fail to see price rise more than 10%. That also means 54% of them will succeed. No matter how you slice or dice the numbers, I don't like those percentages.

Watch trendlines. In the Focus on Failures section of this chapter, I discussed trendline resistance in detail, so there is not much to add here. However, both up and down trendlines can show a trend change. Wait for price to *close* above a down-sloping trendline or below an up-sloping one before pulling the trigger. Many times price will near the trendline and be repulsed, so you want to make sure that the piercing does, indeed, signal a change in trend. You might wait a few days after the trendline pierce to be sure price has pushed through trendline support or resistance.

Tips. For island bottoms, about the only tip I can pass on is to use price mirrors for your trading. What does that mean? Imagine that there's a mirror in the middle of the island bottom that reflects what happens to the left of the island onto the chart on the right.

Now set your target accordingly.

- Price mirrors can help determine how price will move in the future.

For example, say the left side shows a tall peak. Imagine that the right side will also show a tall peak, but one that doesn't quite make it up to the price of the left peak (to be conservative). The right peak will be your target.

Pay attention to the valleys and peaks to the left of the island and project them onto the right of the chart so you'll know what the future will bring. Price mirrors don't always work, of course, but they will give you some idea of where price might turn. You can use that guidance to set your price target for a swing trade.

For island tops, you'll want to look for the closest knot of support below the bottom of the island. That knot will be at least 3 days wide, often much wider, with lots of price overlap as the stock moves horizontally. That's your target. Use the top price shown in the knot.

If the first knot is located well below the bottom of the island, then expect support about midway down that trend. So cut the distance in half and use that as a target.

- Review knots in Chapter 1 for guidance on what they look like and how to use them to trade.

Sample Trade

Consider the situation faced by Clarence as illustrated in **Figure 45.5**. He watched the semiconductor company's stock plummet. During November and December, the stock formed a long island consolidation (I no longer consider long islands to be chart patterns worth studying. Long islands have two gaps that do not share a common price, such as the one shown in November to December). He knew it was not a reversal because the two gaps did not line up across from each other. Then another island formed in January through early February.

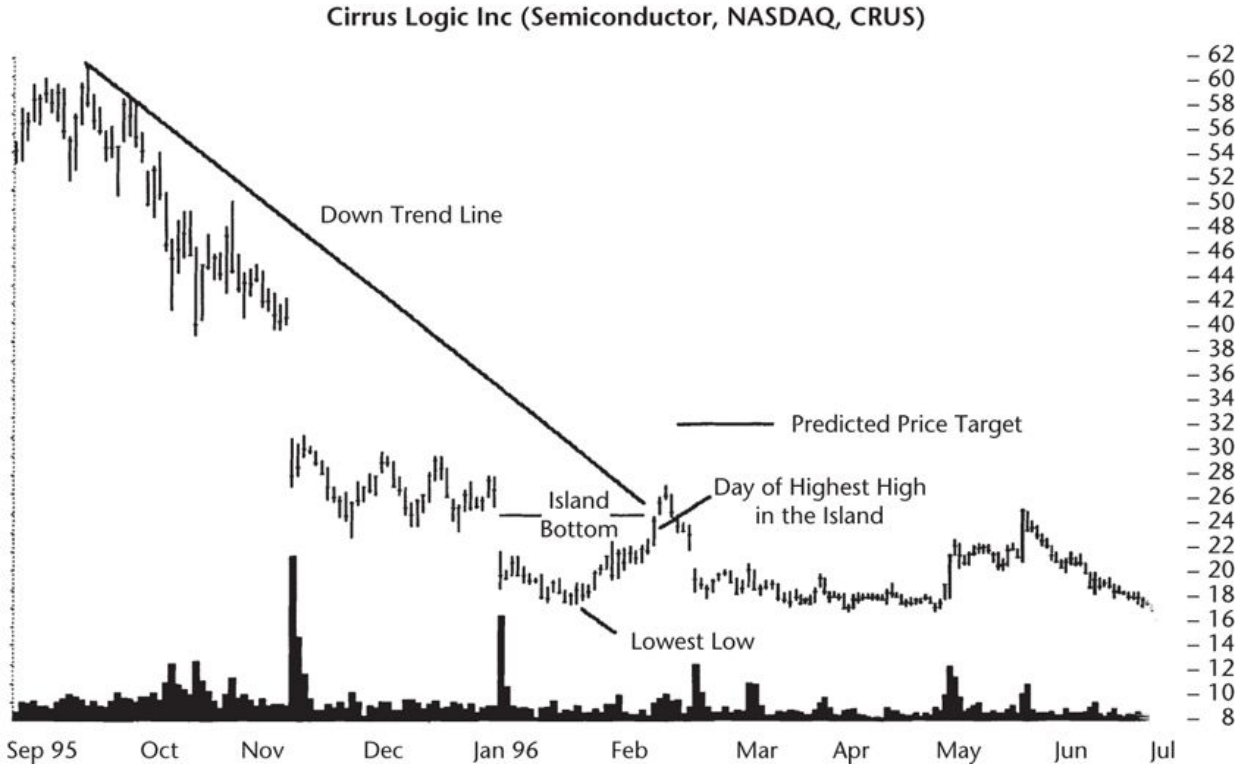


Figure 45.5 A failed island bottom. Sometimes the best trade you can make is none at all.

Since price gapped down to the island and then gapped up away from it, "I knew it was an island bottom," a better investment choice for performance than an island top. He used the measure rule to gauge the likely price to which the stock would climb. The target represented nearly a 30% rise in price, large enough to risk a trade.

Before he bought the stock, he made a few checks. He saw that the trend was down, as the stock had fallen from a high of 61.13 to the

island low of 17.50 (a drop of 71%).

“I drew a trendline from the highest high downward and saw it go through the right island gap. This was a good sign because price had moved above the line and closed there. It signaled a possible trend change. However, something still bothered me, so I held off buying.”

The stock made a new low, and the semiconductor industry as a whole was soft. Did the island bottom really mark a turning point, or would the stock simply rise up, spin around, and retest the low?

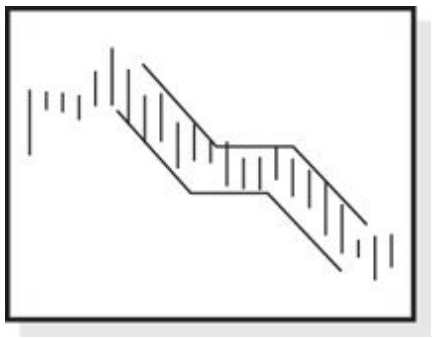
“I wasn't sure, so I decided to wait for a throwback. If it threw back and then continued higher, I would buy the stock.”

Three days after the upward breakout, the stock threw back and closed the gap. “All it had to do was move higher … but it didn't.”

The stock continued lower and, in less than a week, had slipped below the trendline again. “I decided to look elsewhere for a more promising setup.”

Looking back at the stock well over a year later, he saw that it reached a low of 8 and never rose above 27.25, the high just after it pierced the trendline. He realized that sometimes the best trade you can make is none at all.

46
Measured Move Down



RESULTS SNAPSHOT

Appearance: Price moves down, retraces, and then moves down again in a stair-step pattern.

	Bull Market	Bear Market
Volume trend	Downward	Downward
Average first leg decline	20% in 26 days	31% in 31 days
Average corrective phase retrace	48% in 21 days	46% in 20 days
Average last leg decline	21% in 27 days	34% in 31 days
Percentage meeting price target	43%	38%
Synonym	Swing measurement, simple ABC correction	
See also	Bullish AB=CD, flags, pennants	

The measured move down, or swing measurement as it is sometimes called, is an exciting chart pattern because it predicts how far down price is going. I use measured moves not for the prediction, but for what happens after the pattern completes (price returns to the corrective phase). Table 46.5 shows what typically happens after the measured move ends.

Because of the nature of this chart pattern, I do not show the same statistics as in other chapters, starting with the Results Snapshot.

The measured move is a drop-retrace-drop pattern. The theory is that the second drop will equal the first one in both time and price. The above results show the measurements.

In bull markets, the first leg of the pattern sees price drop an average of 20% in 26 days. The second leg sees price drop an *average* of 21% in 27 days. That might sound like the pattern works, because both price (20% versus 21%) and time (26 days versus 27 days) moves are similar. However, if you calculate the price change (not percentage change) of the first leg and check it with the second leg, you'll see the second leg will be equal to or longer then the first leg only 43% of the time.

The bear market numbers show the results aren't as tidy as in bull markets, but they are close. The stock takes a bit longer to drop farther, and yet the two legs are almost equal.

Nestled between the first and second legs is the corrective phase, which sees price retrace a portion of the first leg decline.

Let's show some pictures so you can understand what this pattern looks like. If you haven't met a measured move before, you might want to put on your Sunday best.

Tour

Figure 46.1 shows what a measured move down looks like. The decline from the high (point A) to the start of the retrace (point C) is called the *first leg*. The retrace (CD) is commonly referred to as the *corrective phase*, and the remaining decline to the low (D to the end of the trendline at E) is called the *second leg*. The first and second legs are nearly the same size, but their behavior is described in more detail later in the Statistics section.

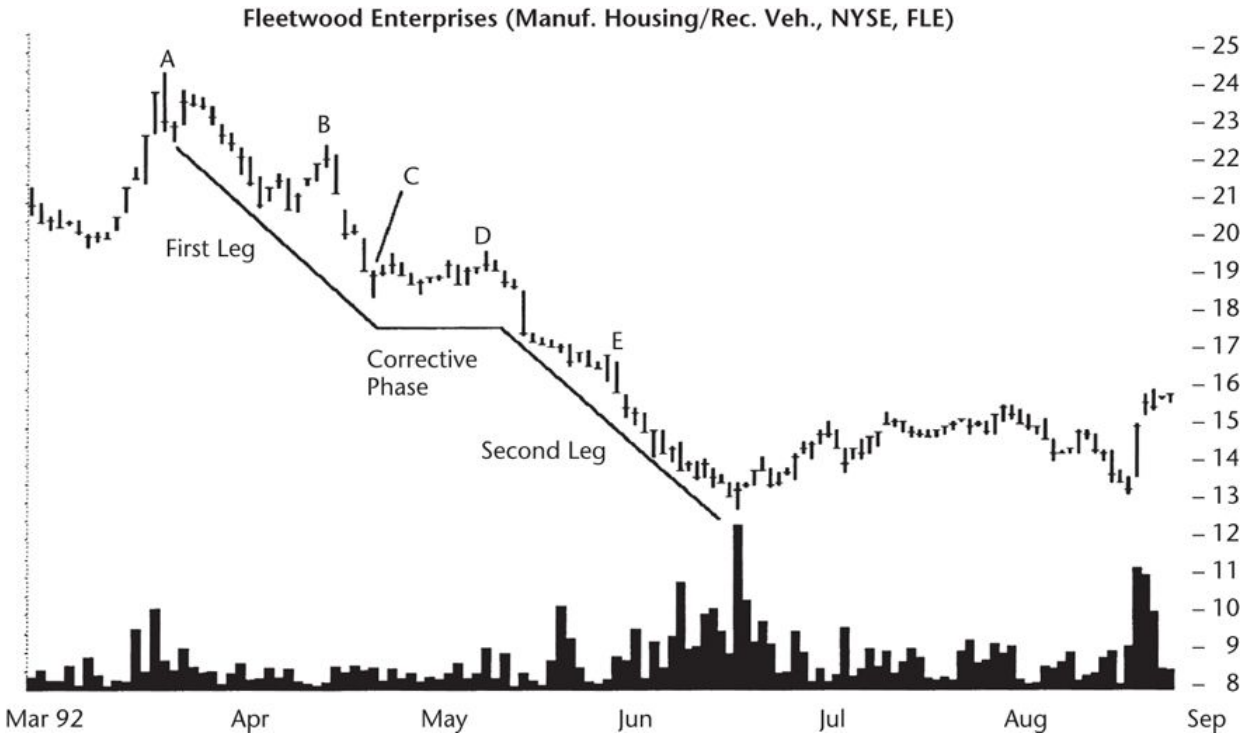


Figure 46.1 A typical measured move down. The slope of the trendline is similar for both legs. Points A, B, and C mark a nested measured move.

The corrective phase is simply an upward retrace of the downtrend. It is a place for the stock to catch its breath and for novice investors to buy into the situation. They purchase the stock and push it up, believing the decline is at an end. Sometimes they are correct, but in this case the decline is only half over. That is the beauty of this chart pattern. Before you buy a stock after a decline, consider that it might be making a measured move down and that the decline is not over. Paying attention might save you some big bucks.

Returning to the figure, you can see the two legs follow a trendline that has nearly the same slope. This is not always the case, but a surprising number of patterns obey this idea. Further, a channel—two parallel lines that follow price down—can encompass the two legs. Although the example is weak on the first leg, you can see how the second leg follows a top trendline (not drawn), connecting points D and E and extending down.

Lastly, the three points marked A, B, and C mark a nested (one pattern inside the other) measured move down. This one is more compact, and it is common to find nested patterns like this. Sometimes you get one measured move right after another (sequential instead of nested), too.

Identification Guidelines

Table 46.1 highlights identification characteristics for the measured move down chart pattern.

Table 46.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price declines in a stair-step manner, in three parts: the first leg decline, an upward retrace, and a resumption of the decline.
First leg	Usually begins from a new high. Price declines rapidly in a straight-line fashion. Avoid declines that curve (they are rounding turns, scallops, or saucers).
Corrective phase	Price can move horizontally but usually retraces a portion of the first leg before resuming the downtrend. If the corrective phase rises above the first leg high, look elsewhere.
Second leg	The *slope* of the first leg down often carries onto this leg. Both legs usually fit inside their own price channels.
Avoid	For sequential measured moves, use the first retrace and not later ones as they get progressively closer to the end of the trend. Make sure the measure rule does not predict price will fall below zero.
Flags, pennants	These patterns have a flagpole that is a strong move down as the first leg, and a corrective phase that lasts no longer than 3 weeks (which becomes a flag or pennant). In well-behaved patterns, the second leg continues in the same direction as the first leg.

Appearance. The pattern looks like a downward stair-step with one tread between the two drops. Price declines in the first leg, retraces a portion of the first leg during the corrective phase, and resumes the downward price trend in the second portion of the chart pattern.

First leg. The first leg begins when price reaches a new high and a trend change begins. Price declines, leaving a peak on the chart. From there, price continues lower, usually in a straight-line run down. Most times you can draw two parallel lines, one connecting the minor highs and another joining the minor lows, forming a down-sloping trend channel.

Corrective phase. The corrective phase stops the decline. Price can move horizontally, but usually retraces a portion of the losses of the first leg.

Second leg. When the second leg begins, the downturn resumes. Price usually follows the slope set by the first leg, but this varies from pattern to pattern. Of course, the two legs will not share the same trendline because the corrective phase offsets them. Even so, the second leg usually fits inside its own trend channel as price declines in a straight-line fashion. The second leg decline approximates the price decline set by the first leg and the time it took to accomplish it (in theory).

Avoid. There are several guidelines that you should follow when searching for a measured move down. Avoid patterns that show a rounded first leg, where price moves lower but curves around in a sort of rounding turn, scallop, or saucer. The trend should be a straight-line decline.

During the corrective phase, price should not rebound far enough to exceed the high set by the first leg. If price rises above the first leg high, then avoid the chart pattern. It's not a measured move down.

Watch for consecutive measured moves in a declining price trend. The downtrend will end eventually, so it is best to trade on the first or second measured moves and ignore the rest.

The last caveat is to consider the measure rule. I discuss the measure rule in the Trading Tactics section of this chapter, but the rule says the second leg will approximate the move of the first leg. If the first leg has a large decline, you may find that the predicted price is very close to zero or perhaps even negative. Obviously, the stock is not going to go negative and will probably remain far above zero, so you might look elsewhere for a more promising trade.

Flags, pennants. Flags and pennants share the same type of pattern as a measured move down. The first leg is a very fast decline, forming the flagpole. In a measured move, the drop isn't as fast or as steep in the first leg. It usually lasts much longer, too (but this varies).

A flag looks like a rectangle (with two nearly parallel trendlines) usually tilted against the prevailing price trend, and a pennant has two trendlines that converge. A measured move down has a looser-looking price movement in the corrective phase. The phase often lasts longer than a flag or pennant.

After the retrace in a downtrend (that is, after the corrective phase ends), flags, pennants, and measured moves see price drop again (when they act as they should). Again the move in a flag or pennant is steep and fast in the second leg with price tumbling down in an attempt to reach zero, now! In a measured move down, it's a straight-line run down, but often at a more leisurely pace.

Visit the chapters on flags and pennants and look at the accompanying figures so you can get a better sense for what separates the measured move down from other chart patterns.

Figure 46.2 shows two examples of the measured move down. The first one, marked by points A, B, C, and D, begins after a long price rise. The stock moves up to peak at 59.63 in early July (A). Price declines following a down trendline but stays within a channel until mid-August, when it reaches a low of 51.50 (B).

The corrective phase begins (BC) on volume that is high but not unusually so. Price moves up and retraces 68% of the decline before tumbling again.

In the second leg (CD), price drops below the low set by the first leg (point B) and continues lower to point D. At turn D, the pattern ends.

The second leg is steeper than the first leg and covers the ground in about half the time (36 days versus 19 days). In addition, the second leg is slightly shorter than the first one (the first leg declines by 8.13 or14%, whereas the second one falls 7.25 or 13%).

Another measured move occurs in mid-November and ends at about the same level as the first one in late January (see points E, F, G, and H). If you look closely at the figure, you can see another measured

move that forms in the first leg from point E to point F. Points E1 and E2 mark the corrective phase. Also notice that price recovers to G (near the middle of corrective phase E1-E2) before dropping again.

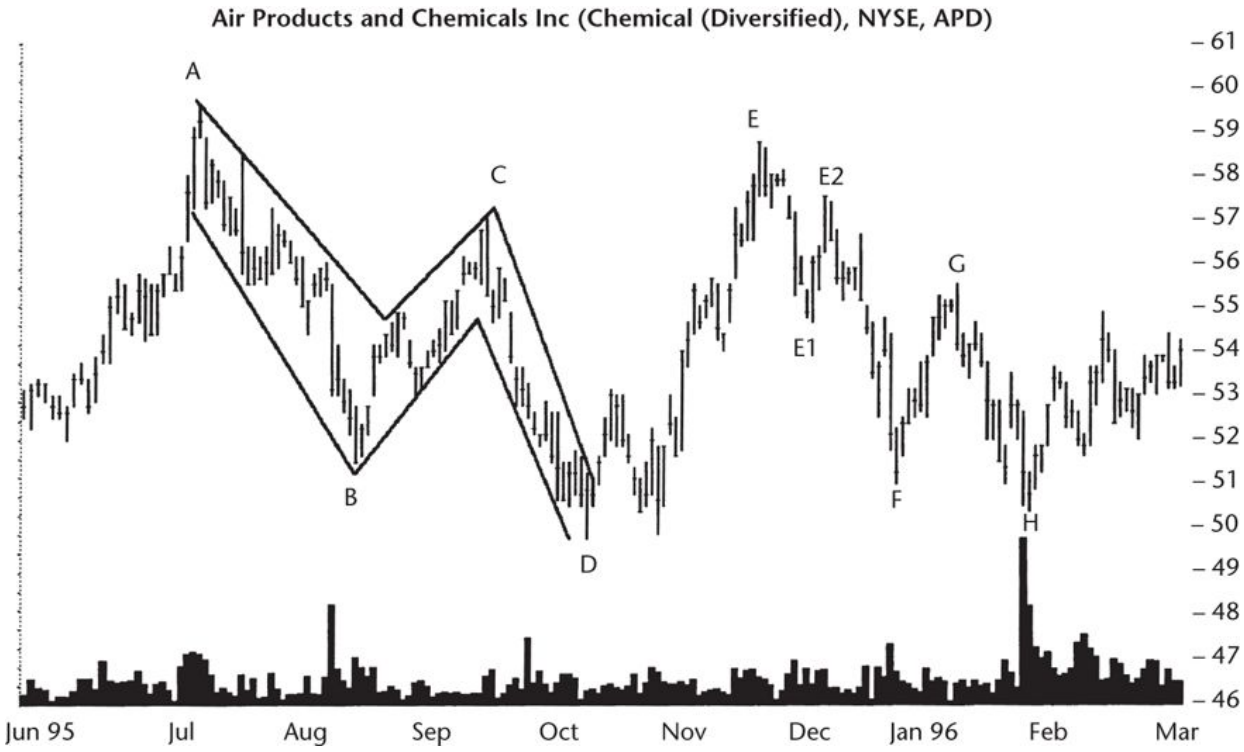


Figure 46.2 Notice how measured move ABCD has legs that fit inside channels. With well-behaved measured moves, the price decline from C to D nearly matches the decline from A to B.

Focus on Failures

Figure 46.3 shows a failure of a measured move to see an extensive second leg decline.

The potential measured move down starts at peak A. Price drops in a straight-line run lower, looking as if a flag or pennant might appear along the trend. However, just past the midway part of the trend, the stock bends to the right. The straight-line run down isn't straight anymore. That's a warning that this measured move might not be as perfect as we hope. (Avoid relying on measured moves when price curves during creation of the first leg.)

Price touches down at B and bounces to C. The BC bounce looks proportional to the AB drop, which is important. I understand that it's hard to quantify what *proportional* means, but it's like pornography. You know it when you see it. In other words, the BC retrace isn't too small or too large for the downtrend (okay, maybe it's a bit small).

Leg one is in place: AB. The corrective phase is there, too: BC. After peak C completes, the stock starts heading lower in the second leg, just as it should in well-behaved measured moves.

But the drop only makes it down to D before the stock turns and climbs above the top of the corrective phase, C, suggesting the pattern is a failure.

If leg two is supposed to be as long as leg one, this pattern falls well short. The AB drop measures $5.48. The CD drop is $1.11 and well short of the AB move.

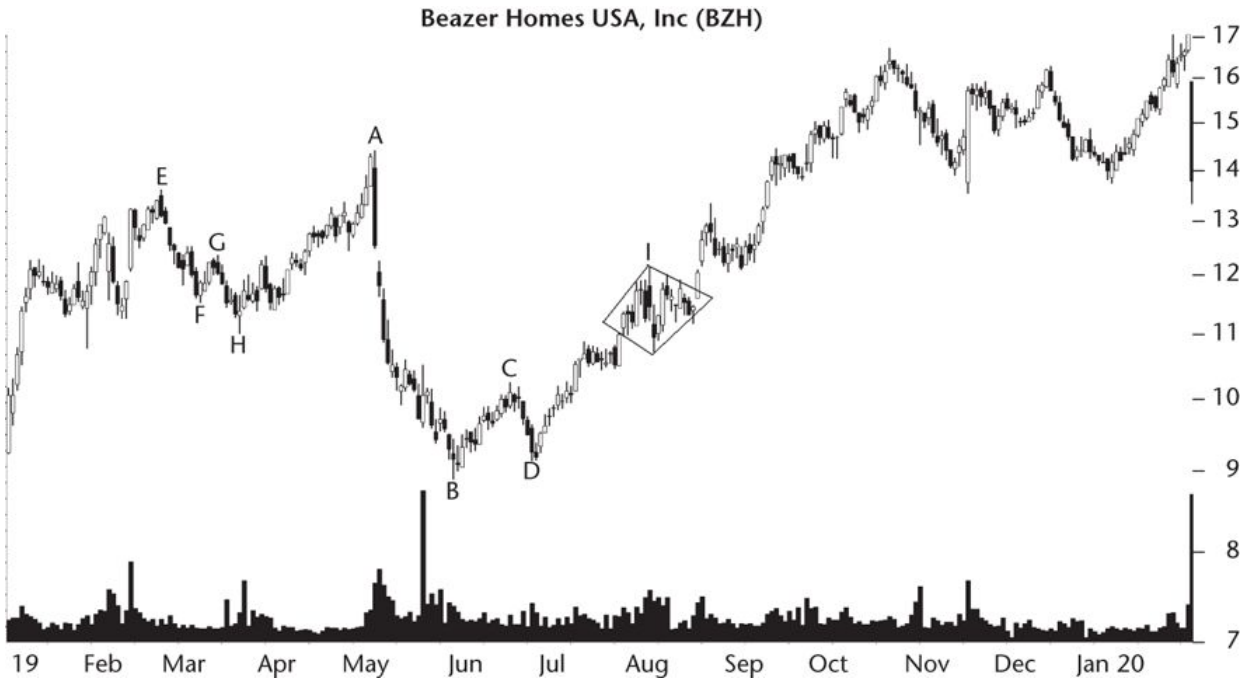


Figure 46.3 This potential measured move down fails to see price drop in the second leg.

What went wrong?

Let's back up to point A. The big spike down at A is the result of second-quarter results reported by the company after the market closed the day before. Investors in the stock didn't like the news, and down the stock went.

Notice that the move from A to C lasted about a month and a half. I've noticed in my trading that about 1.5 months before the end of the quarter (midway in the quarter, that is), the stock starts to move in anticipation of the next earnings announcement. The smart money begins adjusting their portfolio to appease holders. Fund managers want to show investors that they are into the hot stocks and are avoiding the underdogs. Maybe we're seeing that here, only the reverse.

The smart money starts to nibble on the stock, sensing a beaten down stock with problems that will be fixed by the start of the next quarter. Maybe the company wasn't able to close a big deal that quarter and would seal the deal shortly. That's the kind of reasoning traders use to justify taking a position in a fallen angel.

In August, the company announces earnings and price peaks at I, a day after the announcement (in the middle of a nice-looking diamond top, by the way).

In the meantime, the stock didn't complete the measured move down. Indeed, it formed an ugly double bottom at BD (a pattern where the two bottoms are far apart in price instead of bottoming near the same price).

Because bottom D remained above B, it was a bullish sign of good things to come. The measured move failed to see price drop in the second leg. Instead, the stock recovered from the disastrous earnings report, handing a failure to the measured move down.

Statistics

Table 46.2 shows general statistics.

Number found. I found 1,380 measured moves with the first appearing in August 1991 and the most recent in January 2015 in 853 stocks, but not all stocks covered the entire period, and some no longer trade.

Table 46.2 General Statistics

Description	Bull Market	Bear Market
Number found	962	418
Average length (days)	76	83
Median first leg decline	–18% in 17 days	–27% in 23 days
Median corrective phase retrace	46% in 15 days	45% in 16 days
Median last leg decline	–18% in 16 days	–31% in 23 days

Average length. The average length of a measured move is about 11 or 12 weeks.

Performance. The Results Snapshot (chapter start) shows the average first-leg, corrective phase, and second-leg values, so I decided to provide you with the median values in Table 46.2.

The first leg is about equal to the second leg in both bull and bear markets. For example, in bull markets price drops 18% in 17 days to form the first leg. The second leg takes price down another 18%, and it does it one day quicker: 16 days.

The table shows the median retrace between the two legs (the corrective phase). The numbers say the stock climbs back almost halfway up the first leg in about 2 weeks.

Table 46.3 shows volume statistics.

Volume trend. Price trends downward in the pattern between 74% and 76% of the time on average.

Average success rate. If you ignore volume and just measure how often the price drop in the second leg meets or exceeds the drop in the

first leg, we see it's successful 43% of the time in bull markets, or 38% of the time in bear markets.

Rising/Falling volume. If you sort the success rate by volume trend, we see patterns with a rising volume trend outperforming those with a falling trend, quite substantially, too.

For example, in bull markets I found that measured moves with a rising volume trend (found using linear regression from the start to the end of the pattern) reached the measure rule target 51% of the time. That's an improvement over 40% of them with a falling volume trend.

Table 46.3 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	76% down	74% down
Average success rate (leg 2 >= leg 1)	43%	38%
Rising volume trend and success	51%	52%
Falling volume trend and success	40%	33%

Table 46.4 Success Over Time for Bull Markets

Description	Bull Market
1990s	42%
2000s	41%
2010s	47%

Is this finding useful? It might appear so, but consider how I found the volume trend. I measured it from the start of the measured move *to its end*. Thus, you'll know (for sure) if volume is rising or falling only *after* the pattern completes.

Sigh.

However, if you see volume well above average in the first leg, then assume that volume in the second leg will be less (you'll have a falling volume trend).

If you see volume below average in the first leg and the corrective phase sees increased volume, then you might conclude that volume

will rise throughout the pattern. If that's the case, then the probability increases that the measure rule will work as expected.

Table 46.4 shows how often price reached the measure rule target over three decades. Because the bear markets only appeared in the 2000s, they are not included in the table or in the statistics.

The percentages in the table show how often the second leg met or exceeded the price move of the first leg (not on a percentage bases but dollar for dollar).

The measured move has shown improved performance in the 2010s, slightly above the performance of the other two decades.

For **Table 46.5**, I programmed my computer to find what happened after the measured move finished (after the second leg). Let's discuss the bull market numbers, but you interpret the bear market results the same way.

I found that 23% of the patterns remained below the bottom of the corrective phase. Using Figure 46.2 as a reference, the stock remained below the price of B.

The corrective phase is BC, and I found that 28% climbed that high before reversing. Another 15% climbed above C but below the top of the pattern (A). The rest, 33%, saw price rise above the top of the pattern.

The numbers are additive. For example, we know that 51% (23% + 28%) of the patterns will see price remain below C. Sixty-seven percent will remain below the top of the pattern (rounded upward).

What does this mean? If you see a measured move down appear in a stock, there's a 77% chance that price will rise into the corrective phase (that is, 23% remain below the corrective phase). That's valuable trading information.

Table 46.5 Where Does Price Stop?

Description	Bull Market	Bear Market
Above pattern top	33%	29%
Above corrective phase, below top	15%	17%
Within corrective phase	28%	35%
Below corrective phase	23%	18%

Trading Tactics

Table 46.6 outlines trading tactics for measured moves.

Measure rule. Use the measure rule to help predict how far price will decline. Refer to Figure 46.5 during the discussion of its computation. In the figure, four letters outline the measured move: A through D. First, tabulate the height of the first leg (shown by points A and B) by subtracting the lowest low (42) from the highest high (52.88). This gives a height of 10.88. Subtract the height from the highest high in the corrective phase (point C at 47.75). The result is a target price of 36.87. Price meets the target on 7 December.

That computation uses the full height of the first leg. The bottom portion of the table shows how often the measure rule works using various heights. If you were to use half the height of the first leg in the computation, it would work almost all of the time, as the table shows (93% to 97%).

Corrective phase. After a measured move down completes, the corrective phase often acts like a magnet, attracting price. It's a dependable location to sell an existing holding. See Table 46.5 to learn that there's a 77% (bull market) to 82% (bear market) chance of the stock moving into the corrective phase. To put it another way, only 23% (bull market) and 18% (bear market) see price remaining below the bottom of the corrective phase.

Experience

Let me tell you about what I found in my trade review.

Table 46.6 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the length of the first leg from the highest high to the lowest low (at the start of the corrective phase). Subtract the result from the highest high reached in the corrective phase to get the target price. The bottom portion of the table shows the success rate using various heights.
Corrective phase	Refer to Table 46.5 to see where price may stop rising.

Description	Bull Market	Bear Market
Percentage reaching half height target	97%	93%
Percentage reaching .75 height target	72%	68%
Percentage reaching full height target	43%	38%

Assurant Inc.

Figure 46.4 shows a trade I made using a measured move down pattern in Assurant Inc. (AIZ). The measured move begins at A and ends at D. The first leg is AB, a drop of 6.54. The corrective phase, BC, tows price back up before the second leg begins. The second leg, CD, posts a drop of 9.26, far exceeding the length of the first leg.

Here's what I wrote in my notebook about the entry: “16 June 2012. Buy reason: This is near the yearly low, resting on support. I think it's a buy, but the company has troubles going forward. They are buying back shares but still have to get their act together. If a good quarter comes in, this could pop. I expect the stock to ease upward. The leg 1 drop was about 6.50 points and leg 2 was about 9, so it's due for a rebound.”

My computer calculated the position size as 5/8 of a full position, so that's what I bought. The sizing is based on the market and stock's

volatility. I bought at the market open (filled at E, 33.66) with a volatility stop calculated at 31.85 or 6% below, but this was an anticipated long-term holding, so I never placed the stop. I do that for buy-and-hold situations like this one.

Targets were 39, 42, and 56, which are locations of overhead resistance set up by prior peaks, with support at 32, which is just below the low at D.

I think the 39 target is because it's in the corrective phase of the measured move. That's often an easy target to reach.

- Lesson: After the measured move completes, use a climb back to the corrective phase as part of a short-term swing trade.

As the trade progressed, an ascending broadening wedge formed at F. I describe a trade using that pattern in Chapter 12, Broadening Wedges, Ascending.

Figure 46.4 This measured move up led to a profitable trade.

After a choppy beginning where the wedge appeared, the stock started trending and climbed all the way to G. Here's my notes on the sale: “14 September 2013. Sell reason: This has reached my sell target of 56. I'll sell half and see what happens to the other half. According to

[a report from analysts at] Ford, the stock is trading at the top of the 5-year high–low PE [price/earnings ratio] band. PSR [price/sales ratio] is 0.47 but near the top (0.50) of the 5-year high–low band. Vickers [says] insiders are selling. None are buying, but the amounts, for the most part, are small."

I sold and received a fill at 55.94 for a gain of 69% with a hold time of about 15 months.

The stock paused for about a month before resuming the uptrend.

My notes claim that I bought in at the perfect time (I'm not sure how I could have timed the entry better).

As for the exit, the 56 level was a resistance area and I sold right as the stock peaked. But as I mentioned, the stock continued to go higher, and that's fine. I still owned part of my holdings that I picked up as part of the broadening wedge trade.

- Lesson: Selling when price reaches a target, if properly chosen, can be the smart move.

Michaels Stores

In mid-2004, I sold part of my holdings in Michaels Stores (MIK), right as a measured move down ended. I expected the stock to go lower, based on what I thought would be a nested measured move down. The pattern never appeared, but if it had, it would have predicted an additional drop of about 8%.

The day I sold, the stock hit bottom (I hate it when that happens). From there, price moved up 97% in just over a year. *Oops*. Thank goodness I only sold a part of my shares and hung onto the rest.

- Lesson: Trying to predict when a measured move down will occur can be difficult.

Energy Select Sector SPDR Fund

In 2019, I owned the Energy Select Sector SPDR fund (XLE), an exchange-traded fund in the energy sector. I knew energy stocks were weak, so I decided to sell my shares. The stock completed a measured move down and when price returned to the corrective phase of the

measure move, I sold it at 63.54 in late June 2019. The stock went lower from there, going into August, reaching a short-term low of 55.55. The stock ultimately dropped to 22.88 in March 2020, or 64% lower (because of a price war and a glut of oil due to Covid-19).

What these trades describe is how I use the measured move to predict how far price will recover. I use the pattern defensively for stocks I own.

I no longer try to predict where the measured move will bottom. Rather, once I see a completed measured move, I know where price will go (a rise back into the corrective phase).

- Lesson: A good place to sell a weak stock is when price bounces back to the corrective phase.

Sample Trade

People are nasty; just ask Eddy. He is an airline reservation agent. Between the company monitoring his phone calls to be sure he peddles a car and hotel when appropriate and the people screaming at him from the other end of the phone, it is a tough living. There is nothing he can do about equipment problems, lost luggage, or weather, but people do not seem to care. Even the full moon gets into the act because that is when the crazies call.

What he would really like to do is invest in the stock market. He does it now, but to a limited extent, because of a cash-flow problem. Fortunately, with a few clicks of his computer mouse he can flip to the Internet and monitor his latest stock pick when he is not busy.

That is how he uncovered the situation shown in **Figure 46.5**. “I watched the stock climb from a low of about 10 in June 1994 [not shown] to a high of 53.63 in October 1995. Every so often, I'd draw trendlines along the bottoms and watch how the upward trend seemed to be accelerating [the trendlines grew steeper over time].”

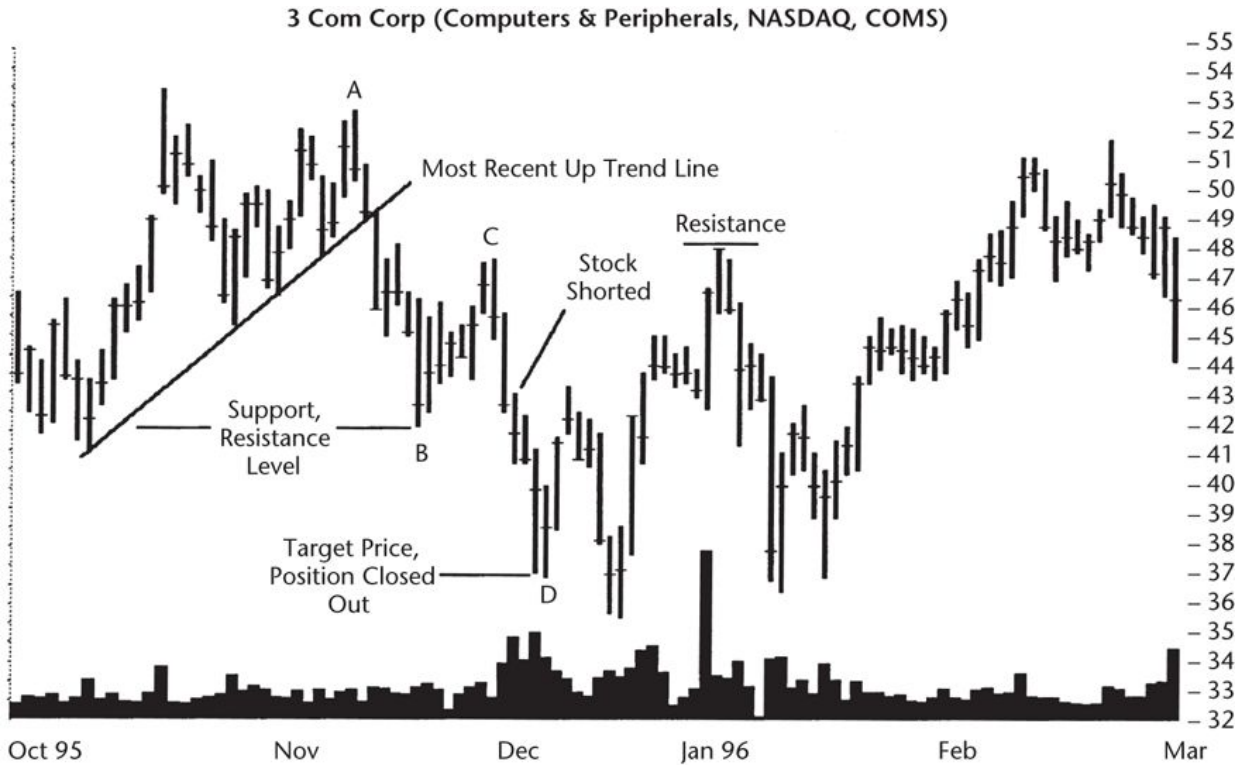


Figure 46.5 Measured move down followed by corrective phase. Eddy made $5 per share trading this (points A–D) measured move down.

Since he knew this could not last, he was ready for a trend change, which occurred on 14 November when price pierced the trendline, moving down.

Instead of shorting the stock immediately, "I decided to wait for a pullback. Much to my surprise it never came."

Price moved steadily lower until it reached a support level at 42. From that point on, price rose higher for the next week and a half. Then, it dropped sharply, tumbling $3 in one session.

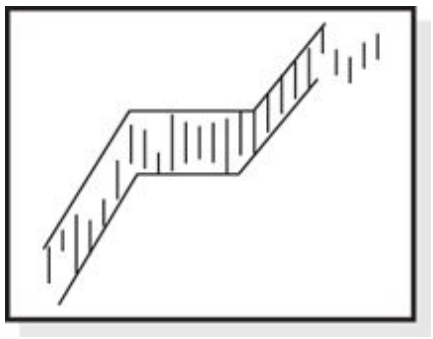
When price fell, it pierced a small up trendline, drawn along the bottoms of the climb from points B to C. "I saw what was happening when I drew the trendline. The stock was making a measured move down, so I shorted the beast at 42."

He used the measure rule to compute the predicted price move (high at A minus the low at B for the height, subtracted from the high at C to get D) and placed an order with his broker to cover the short at the

predicted price (36.88). “Just 3 days after I placed the trade, the stock reached my target. I made about $5 a share or 12%.”

If you look at Figure 46.5, you can see that price rose to the level of the corrective phase bottom (point B), then retreated 2 days after Eddy completed his trade. Later on you can see that price also stopped rising at the top of the corrective phase (“Resistance”). The corrective phase is a zone of support and resistance.

47
Measured Move Up



RESULTS SNAPSHOT

Appearance: Price moves up, retraces, and then moves up again in a stair-step pattern.

	Bull Market	Bear Market
Volume trend	Downward	Downward
Average first leg rise	36% in 38 days	38% in 24 days
Average corrective phase retrace	48% in 27 days	49% in 21 days
Average last leg rise	31% in 33 days	32% in 23 days
Percentage meeting price target	60%	52%
Synonym	Swing measurement	
See also	Bearish AB=CD, flags, pennants	

The measured move up is the reverse of the measured move down but with worse performance. The measured move up has three parts: (1) a first leg that sees price rise in a straight-line run, (2) a retrace that captures part of the first leg move, and (3) a second leg that sees price resume the upward move. In a perfect world, the first and second legs would be the same length. That's what the measure rule for this chart pattern says.

However, the percentage rise in the first leg during bull markets is 16% longer than the second leg (a rise of 36% versus 31%, respectively). Even on a calendar basis, the first leg is about 15%

longer (38 days versus 33 days). In bear markets, the first leg is longer than the second one when they should be the same length.

Using the first leg height (in dollars), projected upward from the bottom of the corrective phase to get a price target, works only 52% to 60% of the time.

What all this information means is that when predicting a price target, be conservative. I'll talk more about this in Trading Tactics and elsewhere in this chapter.

Tour

Figure 47.1 shows a measured move up chart pattern with the three components labeled. The first leg sees price following a trendline. Many times a trendline drawn on either side of the minor highs and lows constructs a channel (which I didn't do in this example).

The corrective phase retraces a substantial portion of the rise, usually 40% to 60%, before price resumes rising. In the figure, the corrective phase begins in late January and extends through most of February. Price retraces 55% of the first leg price move.

Once the correction completes, price climbs even more rapidly during the second leg (in this example). You can see that price bows upward instead of touching the trendline in a sort of rounding-over maneuver before topping out in June. The rise constitutes what is commonly called the second leg. The second leg is the rise from the bottom of the corrective phase to the end of the chart pattern.

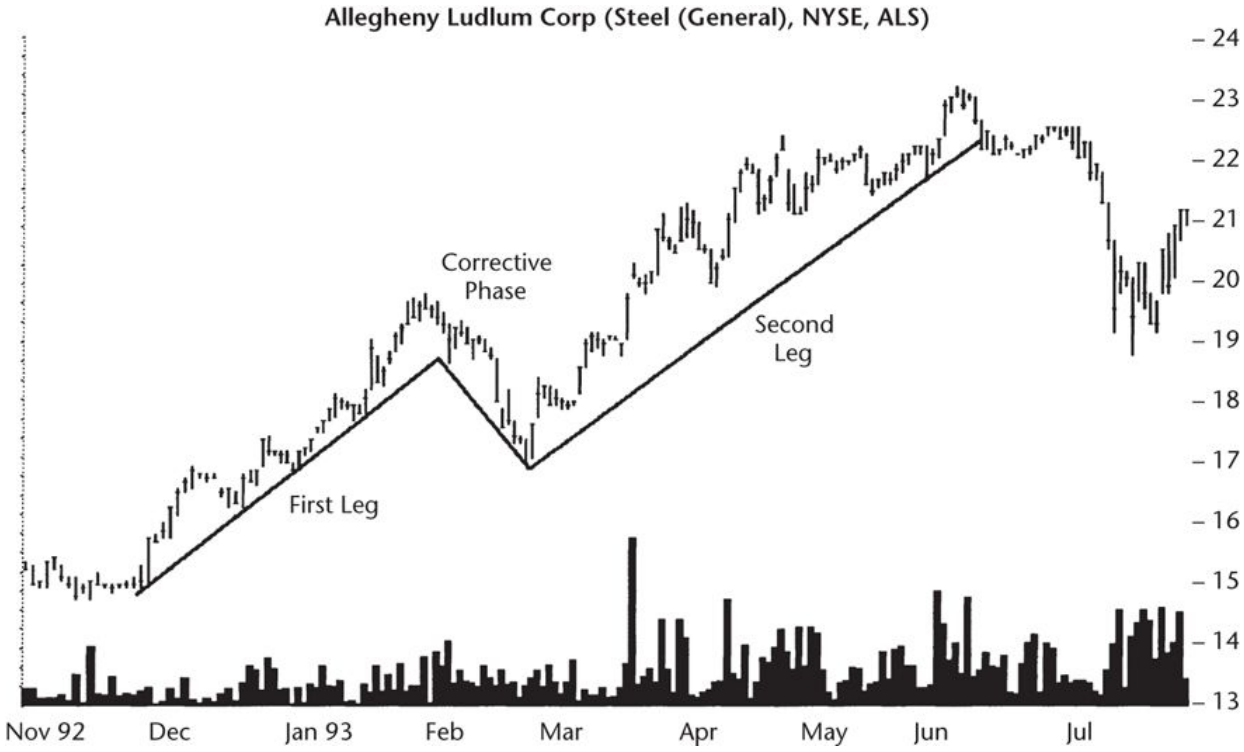


Figure 47.1 A measured move up. The second leg gain nearly matches the gain posted by the first leg.

Once the pattern completes, price sometimes returns to the corrective phase or lower. In this example, you can see that price dropped to just

below the top of the corrective phase (in July) before recovering.

Identification Guidelines

Table 47.1 lists identification guidelines for this chart pattern.

Appearance. The pattern begins life by seeing the stock rise in a strong push higher. This forms the first leg, and it's often a straight-line run upward. Price retraces in the corrective phase as if pausing to rest. Then the rise resumes and forms the second leg. The rise-retrace-rise pattern becomes the measured move up.

First and second leg. Consider Figure 47.2. In the two legs, you're looking for a straight-line run upward. If you see a pronounced curve in the first leg, then look elsewhere for a new measured move.

Often the rise will fit inside a channel. I don't show any channel lines in this figure, but imagine drawing another trendline parallel to the first one connecting the minor highs and see that the first leg fits inside a channel.

The second leg does even better. The bottom trendline touches several places, and a parallel top trendline (not shown for clarity) also intersects the minor highs nicely.

Often you'll see trendlines drawn along the minor lows of the two legs sharing nearly the same slope. It is somewhat surprising how often this observation holds true. However, just because there is a wide variation in the trend slope is no reason to eliminate a measured move from consideration.

Table 47.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price rises in a straight-line run upward in the first leg, pauses and retraces in the corrective phase, and resumes the uptrend in the second leg. The combination looks like a stair-step rise.
First leg	Price often follows a channel upward before entering the corrective phase. The first leg is a strong, straight-line push upward.
Corrective phase	Price declines, usually between 40% to 60% of the first leg move, before heading upward again. The retrace is usually proportional to the first leg rise: Large retraces follow large rises. Sometimes the corrective phase resembles a saw-tooth pattern (a few sharp rises and declines in a row) before price breaks away and zooms upward. This saw-tooth pattern usually associates with a long price climb leading to the measured move.
Second leg	Price rises, loosely following the slope of the trendline set by the first leg. Price commonly fits inside a channel as it rises, but this behavior is not a prerequisite.
Avoid	Avoid patterns where the retrace travels too far down the first leg. Anything beyond an 80% retrace is too far and too risky to invest in.

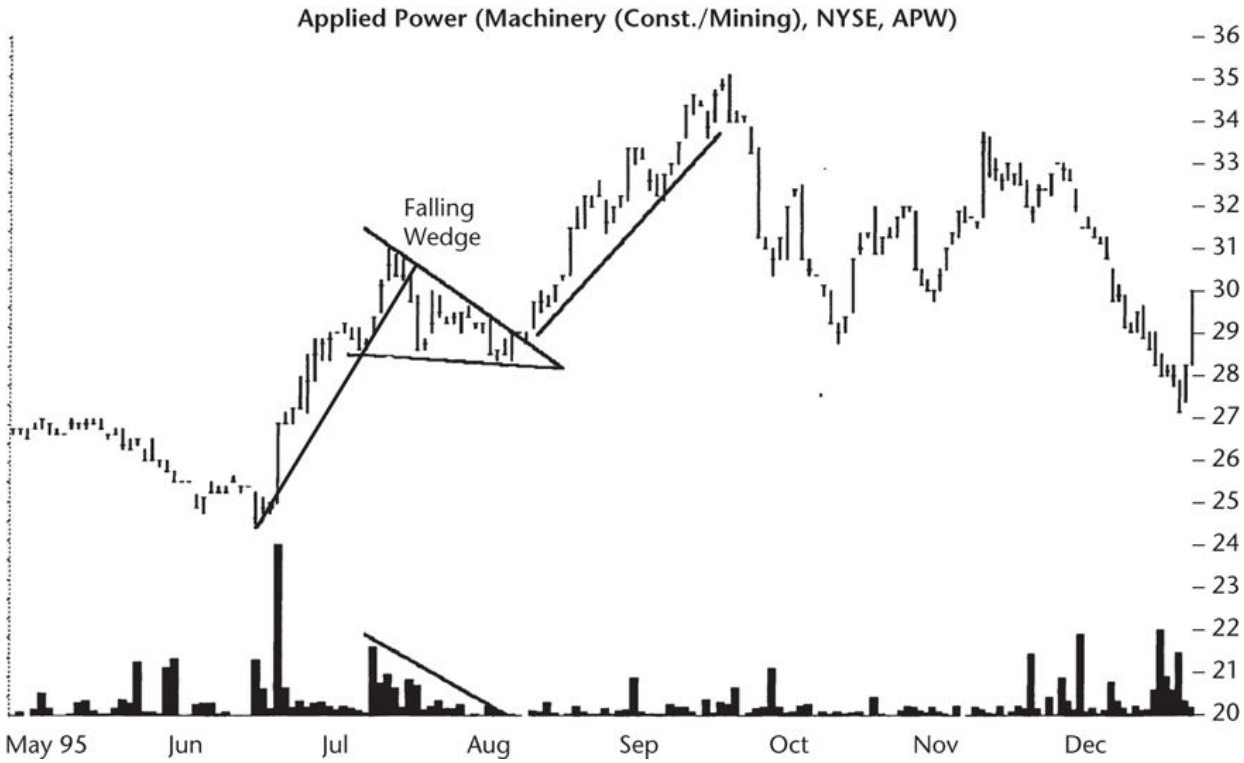


Figure 47.2 A falling wedge marks the corrective phase in this measured move up. Note the receding volume trend of the wedge.

Corrective phase. In this example, a falling wedge composes the corrective phase (which is unusual). The wedge makes trading this measured move easy since it predicts a price rise.

Once price breaks out upward from the wedge, buy into the stock and ride the upward move. If you bought the stock following this procedure, you would make somewhere between 15% and 20%, depending on when you traded the stock. That is not a bad return for a hold time of about 6 weeks. Also note the very distinctive down-sloping volume trend for the falling wedge.

In this example, the corrective phase sees price retrace the first leg move by 40%, within the usual 40% to 60% range (allow retraces outside of this range). Sometimes when the rise leading to the start of the measured move is extensive, the corrective phase becomes long and choppy, resembling a saw-tooth pattern marked by quick rises and sharp declines. In such a case, it might be prudent to wait for price to rise above the high established during the first leg before investing. That way you can avoid the most common measured move failure.

Avoid. You want to avoid measured moves with corrective phases that descend too near the first leg start. I do not have a set amount for this retrace, but I would probably steer away from chart patterns that retrace more than 80% or so of the prior upward move.

In addition, if the first leg does not follow a straight course upward or if it fails to stay within a well-defined channel, you might want to look elsewhere for a more promising situation. Sometimes when a chart pattern does not *feel* right or look right, then it is giving you a warning to stay away. Since measured moves are a common chart pattern, you can easily find another opportunity.

Focus on Failures

Figure 47.3 shows the most common type of measured move up failure. The stock forms a double top that kills the second leg rise. The second leg does not near the price move of the first leg as do most well-behaved measured moves.

Why does this particular example fail? The figure shows a choppy, horizontal saw-tooth pattern leading to the first leg rise. The first leg soars above the two tops of the saw-tooth and price moves up smartly. Then price rounds over and starts correcting. The figure at this point reminds me of a mini-bump-and-run reversal. However, the bump phase does not meet the two-to-one height ratio of the lead-in phase. Still, it does give you pause about investing in this situation.

The second leg starts rising with no significant change in volume. This is a warning sign. There is a common Street axiom that says rising prices need high volume, but falling prices can decline on their own weight. This formation appears to be an example of that axiom.

Since there is little upward buying pressure to push price higher, momentum fades out just below the prior top and then price tumbles. The resulting decline sees price fall below the start of the first leg.

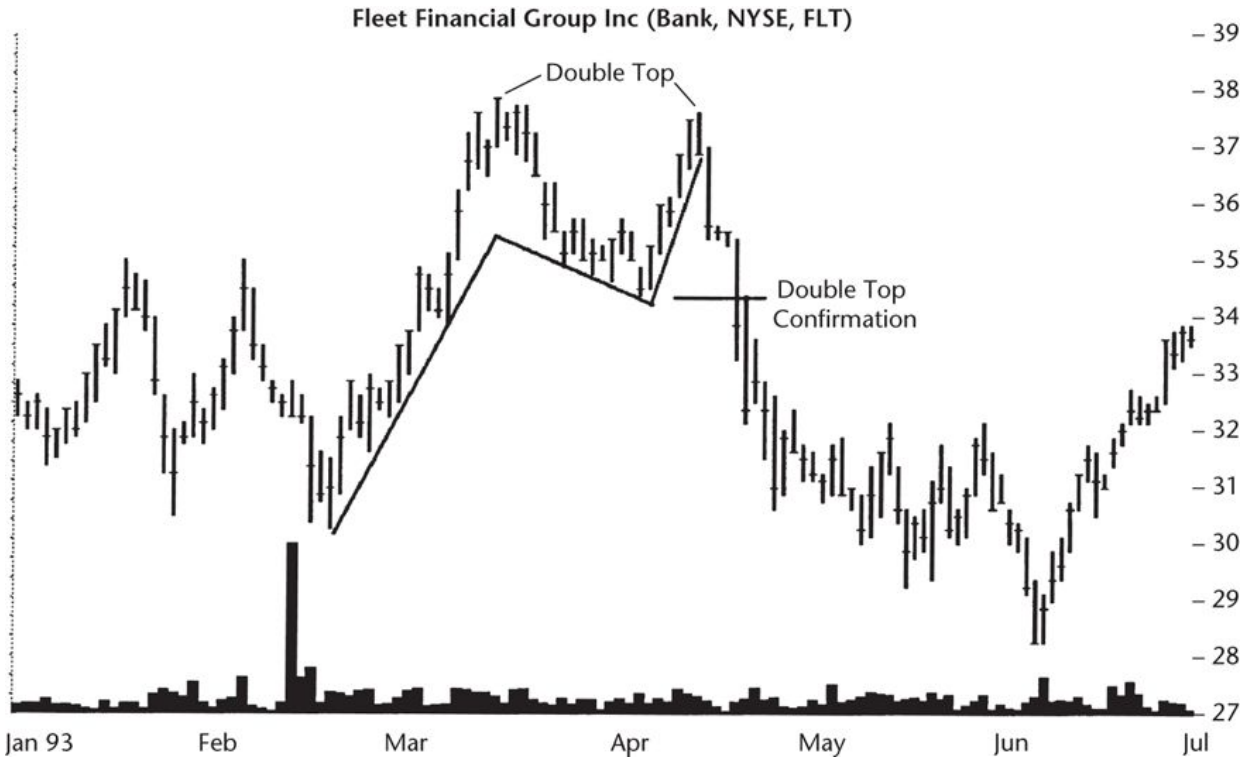


Figure 47.3 A measured move up that fails after turning into a double top.

Before we move on to statistics, I want to alert you to some identification problems. When price rises steadily for a long time, say over a year or more, and then begins a measured move up, the corrective phase might be excessively choppy.

Also, do not be too quick to buy into the situation. Remember that the corrective phase should be proportional to the first leg rise. By that I mean price should fall anywhere from 40% to 60% of the first leg move before beginning the second leg. If price only falls 15% before turning up, then it might be a false breakout.

Sometimes prior peaks are a key to how far price retraces. The peaks are often places of support. When price declines to that level, it pauses and moves horizontally for a time before continuing down or rebounding. Volume is often a key to the level of support you can expect from these types of situations. A prior peak with high turnover will give more support to a stock on its way down. That is not to say that the stock will not burn through support, just that it might take more of a push to fall off the cliff.

Statistics

The tables in this section differ from those in other chapters because of the uniqueness of this chart pattern. Many of the statistics provided elsewhere do not apply because there is no breakout and no ultimate low or high. Success is measured by how often the second leg meets or exceeds the length of the first leg.

Table 47.2 shows general statistics for measured moves.

Number found. Measured moves are as plentiful as ants near spilled sugar, except when you need a good example for a book you're writing. I found 1,338 patterns in 870 stocks from January 1991 to December 2014, but not all stocks covered the entire range. Some no longer trade, too.

Average length. Measured moves have no time limit (if it's less than 3 weeks from leg to leg, it might be better classified as a flag or pennant).

Table 47.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,038	300
Average length (days)	99	69
Median first leg rise	26% in 21 days	31% in 18 days
Median corrective phase retrace	47% in 19 days	48% in 15 days
Median last leg rise	24% in 20 days	27% in 17 days

The average length is about 2 to 3 months, depending on market conditions. Bear markets have price that moves faster than bull markets, so maybe that accounts for the shorter duration.

Performance. The Results Snapshot shows the *average* behavior of measured moves, so I'm showing the *median* move in the table.

Let's compare the bull market move of the first and second legs. Price rises 26% in the first leg in 21 days and nearly the same amount in the second leg. It appears that the two legs are nearly the same size, both in price and time. The Results Snapshot averages show it's not as clear as that, and it gets worse if you translate the percentage moves

into dollar moves. What seems like almost identical legs shows that the second leg is shorter than the first leg 60% of the time (in bull markets).

The corrective phase retrace sees price capture almost half of the first leg move, and taking almost the same amount of time to do it, too.

Table 47.3 shows volume statistics.

Volume trend. Most of the measured moves have a falling volume trend as measured from the start of the chart pattern to the end. Don't throw away a chart pattern just because it has an unusual volume trend unless you have a good reason for doing so.

Average success rate. If you ignore volume and just measure how often the price rise in the second leg meets or exceeds the rise in the first leg, we see it's successful 41% of the time in bull markets, and 48% of the time in bear markets. We'll use this “success” measure to compare performance in this table and the next one.

Rising/Falling volume. Measured moves with a falling volume trend (I used linear regression on volume to get the trend, from the first leg to the last) outperform those patterns with a rising volume trend, and quite dramatically, too.

For example, measured moves with a falling volume trend in bull markets saw the second leg meet or exceed the length of the first leg 45% of the time compared to 35% if volume trended upward in the pattern.

Unfortunately, you won't know if volume is trending up or down until the pattern is complete. *Sigh*. Of course, you can guess. If volume is high during the first leg, higher than what you see in prior weeks or months, then there's a good chance volume will trend lower in the second half of the pattern.

Table 47.3 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	67% down	72% down
Average success rate (leg 2 >= leg 1)	41%	48%
Rising volume trend and success	35%	43%
Falling volume trend and success	45%	50%

Table 47.4 Success Over Time for Bull Markets

Description	Bull Market
1990s	44%
2000s	37%
2010s	40%

Table 47.5 Where Does Price Stop?

Description	Bull Market	Bear Market
Above corrective phase	43%	34%
Within corrective phase	31%	33%
Below corrective phase	12%	13%
Below pattern bottom	15%	20%

Table 47.4 shows how often the second leg met or exceeded the move in the first leg over the decades. The worst performance was in the 2000s, and the best was in the 1990s.

Table 47.5 shows where price declined to after the pattern ended. For example, price remained above the top of the corrective phase almost half the time (43%) in bull markets. Almost a third of the time, the stock returned to the corrective phase and didn't drop any lower.

The numbers are additive. If 43% remain above the corrective phase, that means 57% (31% + 12% + 15%, rounded off) moved into the corrective phase or continued lower. You can use these numbers to help predict where the stock might go after the pattern ends.

I find that kind of information invaluable. It's how I use measured moves in my trading. I know that price will return to the corrective

phase over half the time, so it helps me predict where the stock is going to go.

Trading Tactics

Table 47.6 shows trading tactics for measured move up patterns.

Measure rule. The measure rule predicts the level to which price may rise. To estimate the target price, compute the height of the first leg. Let's use the measured move up shown in Figure 47.4 as an example.

Locate the highest high in the first leg. Usually this is somewhere near the beginning of the corrective phase, and point A indicates this in the figure. From this value (21.13), subtract the lowest low (14.13) in the first leg, shown as point B. The difference (7) is the height of the first leg. Add it to point C (18.38)—or the lowest low in the corrective phase—to arrive at the target price. In this case, the target price is 25.38. Price reaches the target just 10 trading days after the corrective phase ends.

Table 47.6 Trading Tactics

Trading Tactic	Explanation
Measure rule	Calculate the height of the first leg from highest high to lowest low. Add the difference to the lowest low in the corrective phase. The result is the expected target price. The lower portion of the table shows how often the measure rule works using various pattern heights.
Buy	Take a position in the stock sometime after the corrective phase completes and price rises during the second leg.
Support/resistance	The corrective phase shows future support or resistance.

Description	Bull Market	Bear Market
Percentage reaching half height target	99%	100%
Percentage reaching .75 height target	91%	89%
Percentage reaching full height target	60%	52%

The lower portion of the table shows how often the measure rule works depending on the height used. In the above example, we used

the full height. The table shows the full height works 60% of the time in bull markets.

If you want to increase the potential for success, cut the height in half or three quarters and use that in the computation. You'll get a closer target. If price reaches the target, you won't make as much if you sell there, but you may be able to bank a profit.

Once you calculate the target price using the measure rule, ask yourself if the gain is large enough to justify a trade. If the answer is yes, then look at the chart again. Are there areas of resistance on the way to the target price where the stock might get hung up? If so, you might need to lower your target. If you are lucky and significant resistance is above your target, you can move your target upward to just below the resistance zone. In all likelihood the stock will shoot into the resistance zone, so you will have ample opportunity to close out your position.

Buy. After price leaves the corrective phase, then buy the stock. To gauge the breakout point, draw a down-sloping trendline along the minor highs in the corrective phase. Once price *closes* above the trendline, then buy the stock.

A more conservative approach is to buy when price closes above the peak in the first leg or corrective phase (the higher of the two), instead of a trendline pierce.

As the stock approaches the target price, do not be too quick to sell. If the stock is on a roll, go with the flow and wait for price to start declining. Obviously, if price pauses near but below the target price, then it might be wise to sell. Often a limit order set at the full height target works well (at least for me, in bull markets).

Support/resistance. After the measured move ends, price will retrace, sometimes returning all the way down to the corrective phase before meeting any meaningful support. It may pause at the top of the corrective phase or drop to the bottom of it. Sometimes, price just sails right on through. Whatever the case, be aware that if you do not sell near the target price and decide to hold on, you might lose all of your gains.

Experience

I have used the measured move up for both buying and selling.

When buying a stock, I'll see a stock make a strong swing higher, forming the first leg of what I believe will be a measured move up. Price retraces in the corrective phase, and on the exit, I'm there with a buy order. I've entered trades this way a number of times.

I calculate the full height target. Here's where I go astray. Instead of placing a sell order at the target, I sell before price meets the target. In Englehard (EC), the stock never hit the target and I was lucky to get out when I did. The stock dropped dramatically after I sold. In Genworth Financial (GNW), the stock climbed to the target and then dropped in half. Wow.

In Standard Products (SPD), I bought after the corrective phase ended and rode the stock higher, but sold short of the target. I missed a buyout offer for the company by a month. In a similar case, Hawaiian Electric (HE), I sold at the measure rule target, expecting a retrace to the corrective phase that never happened. Two months later, the company received a buyout offer.

In Tesoro Petroleum (TSO) and Freeport-McMoRan Copper and Gold (FCX), I bought the corrective phase breakout and the stock reached the measure rule target almost exactly. In fact, 71% of the time in my stock picks, the measured move up saw price hit the projected price target. That doesn't mean the measured move works better than expected (60% of the time in bull markets), it's that I was able to select candidates that worked better than average.

In Principal Financial Group (PFG), I bought in right at the top of the second leg and watched as price dropped back to the corrective phase. I predicted the drop would happen, too. At least I got that right even though I took a loss.

In Steelcase (SCS), I measured the height of the first leg and found it to be 36%. That's an unrealistic move to expect in the second leg. Indeed, the stock climbed 14% and then died, handing me a tidy loss.

What I learned is this.

- Lesson: Make sure the first leg rise is a reasonable percentage. Values too high mean an unrealistic second leg move. The median first leg rise is 26%. Oddly, if the first leg rise is more than the median, the success rate rises to 46% from 36% for those patterns with smaller first leg moves.
- Lesson: Do buy in as price exits the corrective phase.
- Lesson: Use a limit order to sell at the target. If you're lucky, it'll hit and price will drop thereafter.
- Lesson: Before buying a stock (not because you see a measured move, but at other times), check to see if a measured move pattern has completed near the buy price. If yes, then price might retrace to the corrective phase before rebounding (or it may just keep dropping).
- Lesson: If you own a stock and are contemplating selling, see if a measure move is in the works. If so, try to sell near the end (high) of the second leg.

Sample Trade

Michelle is an engineer. Over the years, she has developed a thick skin to take the ribbing from fellow college students in a male-dominated profession. Even after she graduated and ventured into the professional world, the ribbing continued. She is pretty, and the guys just wanted her attention. I saw this firsthand when I stopped by her office with a question. She was not there at the time, but her desk blotter had the scribblings of love notes from dozens of men. Of course, I added my own, but I digress.

If you were to give a Rubic's cube to Michelle, she would not try to solve it. She would take it apart to see how it was constructed. That kind of inquisitiveness coupled with her ability to solve tough problems in a distinctive way makes her special even among engineers. She is also an investor with the same qualities.

Michelle used a unique approach to take advantage of the situation shown in **Figure 47.4**. “I owned the stock but worried about performance.” During the prior November-to-February period (not shown), she saw the stock form a double top. Price declined from a high of 24.13 to the low of 14.13 at the start of the measured move (B).

“I should have sold after the stock confirmed the double top. Instead, I rode the stock down and lost 41% of my gains. They're around here somewhere,” she spread her arms wide to encompass the office, “but I haven't found them yet.” She smiled and dimples appeared on her cheeks. “I'll do better next time.”

When the stock started its climb (B), she saw the increase in volume. The increase meant that the run would be an extended one, because there seemed to be enough enthusiasm to send price higher. “That was my hope, anyway. Could have been a wish, though.”

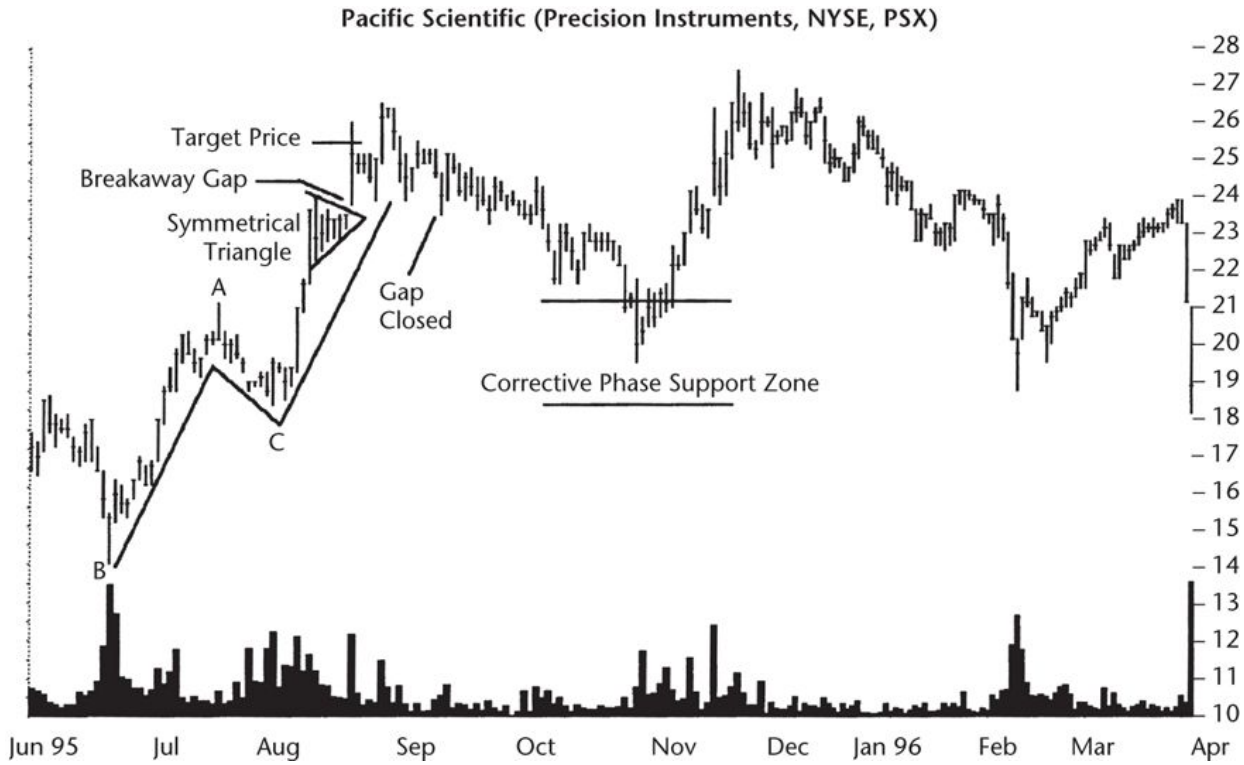


Figure 47.4 Measured move up with a symmetrical triangle. As described in the Sample Trade, Michelle rode this measured move up in a stock she owned. She sold when the breakaway gap closed. The symmetrical triangle shows a typical receding volume trend.

All bull runs must pause now and again, and this situation was no different. “The stock paused and consolidated for nearly all of July [A to C].”

She looked back at the chart and noticed that the stock had reached a zone of resistance where there were several old highs that stalled near 21. Volume picked up, and when price shot upward, she immediately recognized the measured move pattern.

“Did you sell?” I asked.

She shook her head. Michelle calculated that the stock would rise to 25.38, a new yearly high. “I thought the stock might hit resistance at the old high of 24, and that's what happened.”

A symmetrical triangle formed. The pattern obeyed the rules for symmetrical triangles, lower highs, and higher lows with a receding volume trend, and she was confident that she had correctly identified it.

Since there was no way to tell which direction the stock would break out of the triangle, she waited for the breakout. “It was a tennis match with the price ball bouncing up and down in the triangle. Then the stock gapped out the top of the pattern. Yippee! I felt as if I had won the point.”

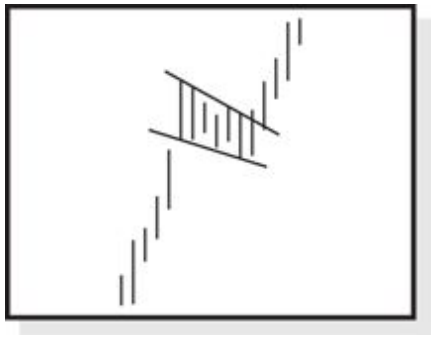
Was the gap a breakaway gap or an exhaustion gap? “The answer was critical.” Because the gap appeared just after a region of consolidation, it was most likely a breakaway gap, so price would continue rising, but how far?

She hoped the triangle represented the halfway mark of an uptrend. She knew that symmetrical triangles sometimes act as half-staff patterns, so she expected a climb to 28 (see the measure rule for symmetrical triangles). “Yes, it was a long shot but one worth taking.” Her calculated price target of 25.38 was met the day price jumped out of the triangle.

About a week later, the stock reached a new high and then fell back. “When price closed the gap in the first part of September, I decided to sell. Fortunately, the next day price zoomed upward and I was able to sell at 24.50, near the daily high of 25.13. That felt good.”

After that, the stock tumbled back to the middle of the corrective phase, right in the center of the support zone. Then the stock recovered. “Did I sell too soon? I looked at the chart 6 months later and saw price hovering in the $15 range.” She winked at me. “I did good.”

48
Pennants



RESULTS SNAPSHOT

Appearance: Price forms a straight-line run (flagpole) of several day's duration. Then the stock pauses, often retracing a portion of its move, forming a short triangle pattern (the pennant) bounded by two converging trendlines.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bullish continuation	Short-term bullish continuation
Breakeven failure rate	54%	40%
Average rise	7%	10%
Volume trend	Downward	Downward
Percentage meeting price target	35%	46%
See also	Flags; flags, high and tight; triangles, symmetrical bottoms; triangles, symmetrical tops; wedges, falling; wedges, rising	

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Breakeven failure rate	54%	32%
Average drop	6%	13%
Volume trend	Downward	Downward
Percentage meeting price target	32%	40%

Pennants are short consolidation patterns that appear in a strong price trend (the flagpole). Their shape is triangular, shown by two converging trendlines, but the triangle lines can slope upward, downward, or even sideways. Most of the time, the tilt will be against the flagpole trend. For example, if the flagpole sees price rise, the pennant will often tilt downward like a small falling wedge.

Pennants tend to be short, several days, but I allow up to 3 weeks. Anything longer than that is better classified as a symmetrical triangle or wedge (rising or falling).

Active swing traders may use flags and pennants in their trading. Like flags, pennants serve as half-staff patterns. The theory is that the price trend after the pennant will be as long as or longer than the trend before the pennant. Does it work? No. I'll explain that the pennant appears about 55% to 57% of the way along the trend.

The percentage meeting the price target (the “measure rule”) in the Results Snapshot shows a more brutal assessment. Only 32% to 46% will see a post-pennant move equal to or longer than the flagpole.

Let's take a quick tour to see what a pennant looks like, how to identify it, why it fails, and tear it apart using out statistical teeth.

Tour

Figure 48.1 shows an example of a pennant in a downward price trend. I show the pennant bounded by two converging trendlines in the middle of the figure. However, the entire pattern actually begins days before the trendlines.

Price eases lower in November and into the start of December. A flagpole, upon which all pennants hang, begins with the straight-line run down that's fast. In 4 days, the stock tumbles from about 25 to 20, retraces to create the pennant, and resumes the downward plunge when price gaps (breakaway gap) lower in January.

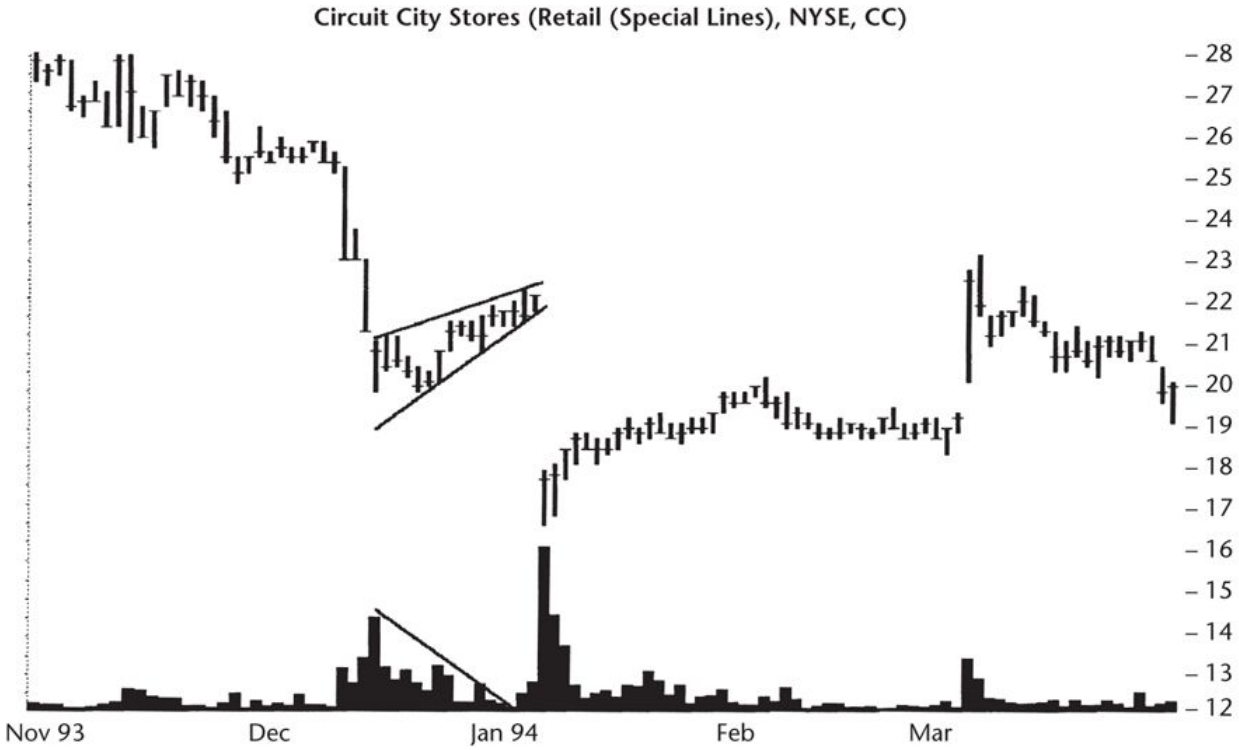


Figure 48.1 A pennant bounded by two converging trendlines looks like a short rising wedge.

In a pennant, two sloping trendlines eventually meet to resemble a small wedge or triangle. Sometimes the trendlines slope upward, as in the figure, and sometimes they do not. Usually, they slope (tilt) upward in a downtrend and downward in an uptrend (that is, against the prevailing trend).

Volume trends downward in this example, and that's the case in the vast majority of pennants.

Identification Guidelines

Table 48.1 shows identification characteristics for pennants, and **Figure 48.2** shows an example.

Appearance. When looking for pennants, I search first for a strong price trend, which becomes the flagpole. Then I look for price to hesitate along the way where the price trend converges and forms a pennant shape. The pennant may slope upward, downward, or look horizontal, but it usually slopes against the prevailing price trend. For example, the pennant in Figure 48.1 slopes upward, and the one in Figure 48.2 slopes downward. Both slope against the prevailing price trend but need not.

Price trend (flagpole). Look for a steep, quick price move leading to the pennant. This feature is important, and it has the side benefit of making pennant spotting easier. The straight-line run can be up or down and should be several points (but it depends on the price of the stock) for several days. The best moves have price with little overlap from day to day, emphasizing the speed of the move.

Table 48.1 Identification Guidelines

Characteristic	Discussion
Appearance	Two trendlines surrounding the price action converge, forming a small pennant shape. Price usually tilts against the flagpole trend: It rises in a downtrend and falls in an uptrend. After the pennant completes, price often resumes the price trend set by the flagpole.
Price trend, flagpole	Pennants can form near the midpoint of a steep, quick price trend. If you do not have a flagpole, then ignore the pennant.
Volume	Volume usually trends downward throughout the pattern. Do not discard a pennant because it has an unusual volume trend.
Breakout direction	Can be in any direction but often follows the flagpole trend (the pennant acts as a continuation pattern).
Duration	Pennants are short patterns lasting from a few days to 3 weeks. Patterns longer than 3 weeks are symmetrical triangles or wedges.

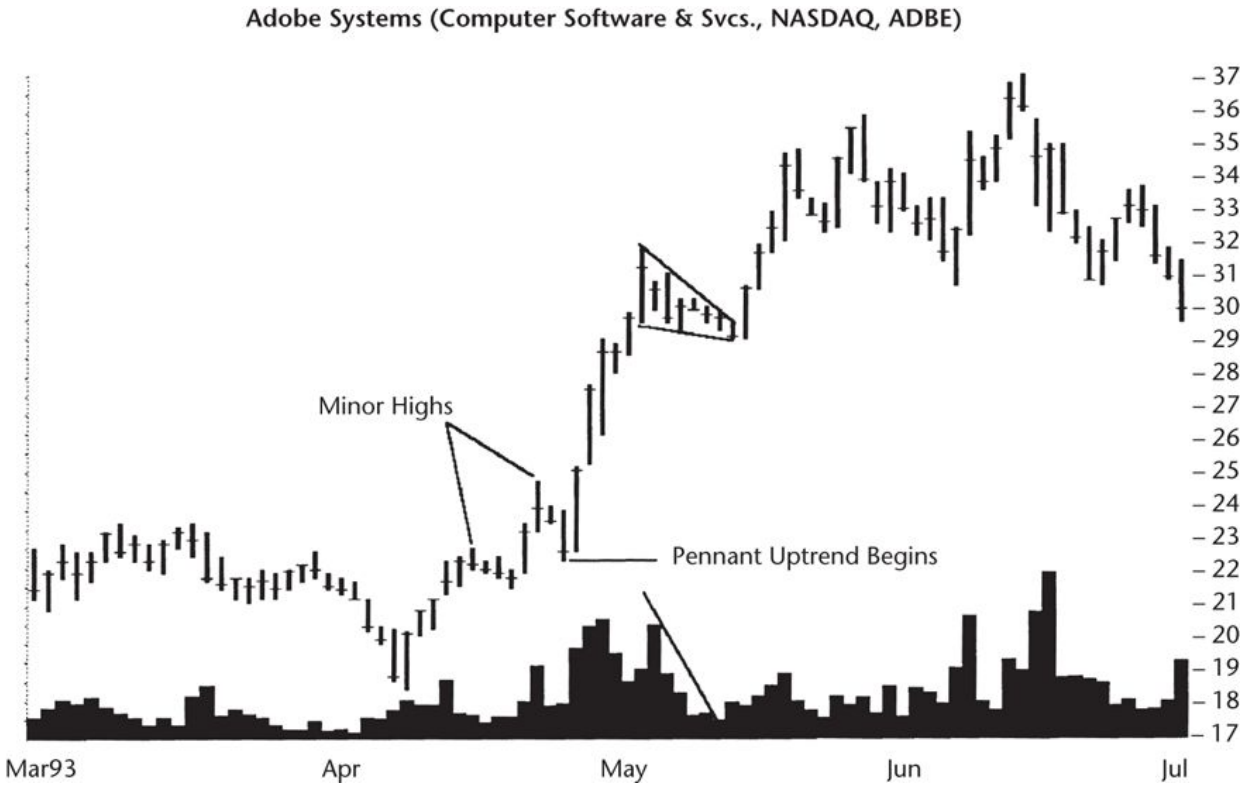


Figure 48.2 A short pennant forms after a quick price rise. The pennant slopes downward and price moves upward after leaving the pennant.

The figure shows the start of the flagpole ("Pennant Uptrend Begins"). The pole ends at the top left of the pennant.

Volume. Most of the time, pennants will have a downward volume trend, but do not exclude a pattern because volume slopes upward.

Breakout direction. Price breaks out of the pennant when it closes outside one of the pennant's trendline boundaries. Price can slide out the pennant's apex, but it'll eventually close above the top or below the bottom of the pennant to force a breakout. Sometimes, you may wish to wait for price to exceed the flagpole top before considering taking a position.

Duration. The 3-week maximum is an arbitrary limit. Pennants can range in length from a few days to 3 weeks. A pattern longer than 3 weeks is better classified as a symmetrical triangle, or rising or falling wedge. The pennants I looked at averaged 8 days long (not including the flagpole).

Figure 48.3 shows a small pennant carried along in a downward price trend. Price undershoots the pattern (for 2 days) at the start, but the pennant still acts as a continuation of the downward price trend. Notice how the pennant slopes against the 2-day upward rise. After the pattern completes, price gaps down (breakaway gap).

Reviewing the identification guidelines, the pennant pattern is clear in the figure if you know what to look for. Price narrows over time. Notice the steep decline leading to the pattern (the flagpole, starting at about 17) and the slope of the price trend after the breakout—the two are nearly identical. In that regard, pennants function like small measured move (up or down) chart patterns. Volume recedes between the pennant ends.

This is a valid pennant.

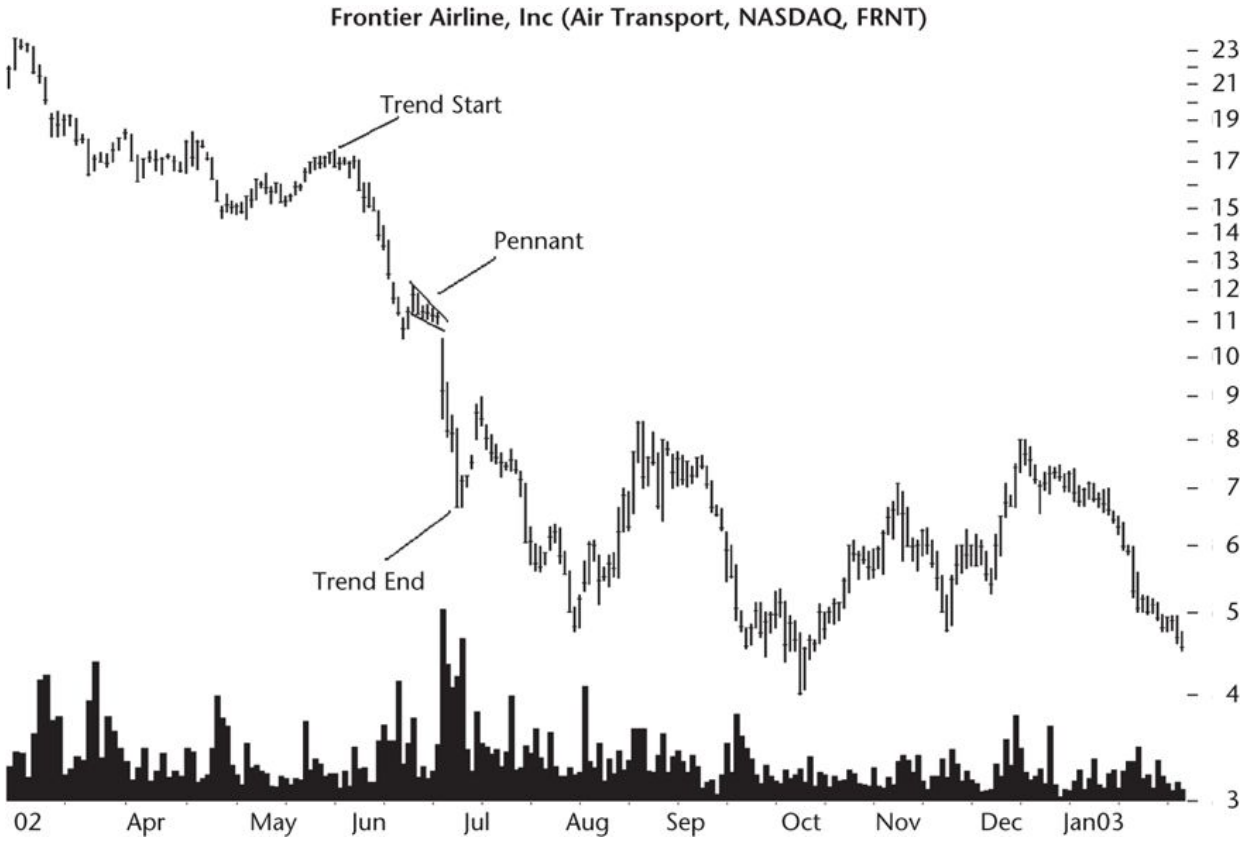


Figure 48.3 The downward price trend overshoots the small pennant on entry. The pattern appears almost midway between the trend start and end.

Focus on Failures

Figure 48.4 shows a failure of a pennant in a downtrend. The pennant probably reminds you of a short symmetrical triangle—one that acts as a reversal. Two trendlines bound price action for several days, outlining the narrowing pattern.

The flagpole leading down to the pennant represents an 18% decline. Volume recedes (in the pennant), as you would expect. Price should continue moving lower after this pennant breaks out but doesn't. Why?

I don't know.

You can see in the figure that price loops around the formation end and then heads lower, forming a throwback. If you held onto your short position, you would eventually make money. However, I still classify this pennant as a failure. Why?

The answer is not because the pennant broke out upward in a downtrend. Rather the stock failed to see price move far enough to equal the height of the flagpole. If the pennant worked as it's supposed to, you would see the stock climb back to the price of the highest peak on the chart, 55.75. Instead, price climbs to just 50.63 before heading lower.

How often does the pennant work as a half-staff pattern (meaning it appears midway in the price trend)? Let's crunch the numbers to find out.

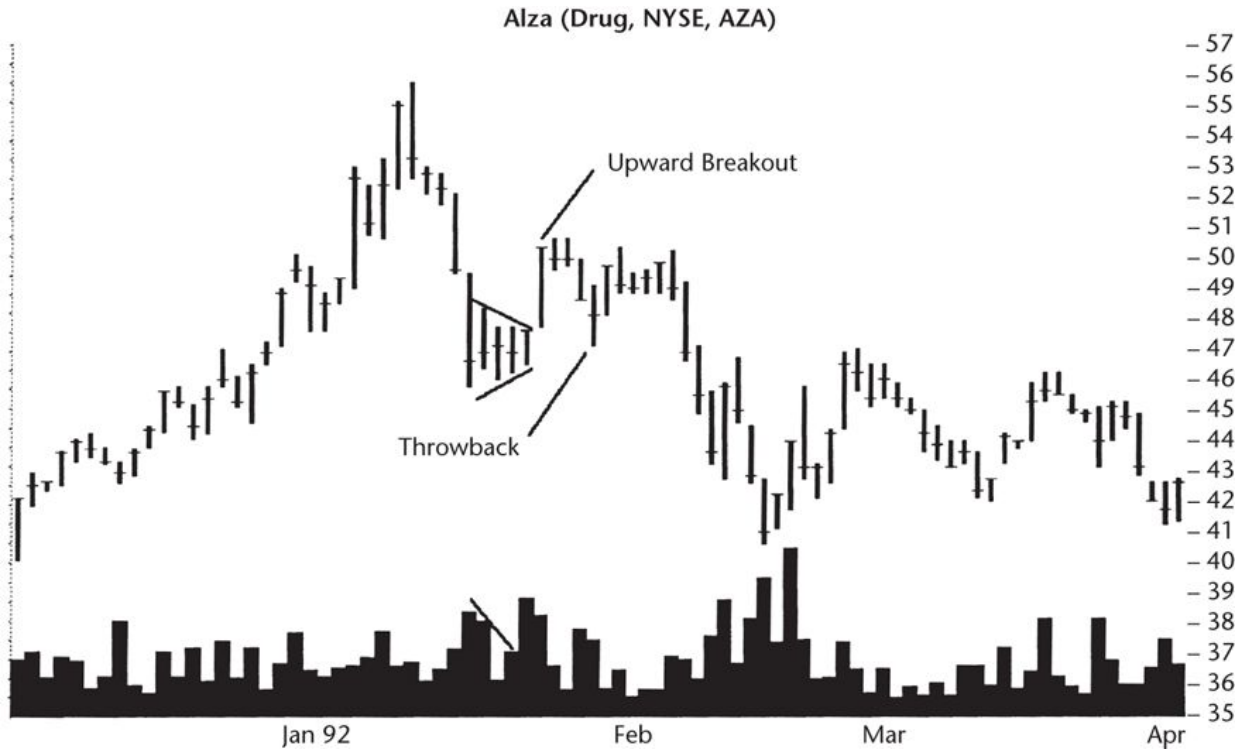


Figure 48.4 This pennant looks like a small symmetrical triangle. Price breaks out upward, throws back to the formation, and heads lower.

Statistics

To measure performance, I used the short-term trend start and trend end. See Figure 48.3 for the labels of the two. I did not look for the ultimate low/high and a 20% price change, but stopped when the price trend ended at a minor low or high. I wanted to see if pennants acted as half-staff patterns. Notice how the pennant in the figure is almost in the middle of the downward price trend located by the Trend Start and Trend End labels. The pennant shows how they *should* behave.

Table 48.2 shows general statistics for pennants.

Number found. I found 2,106 pennants in 734 stocks with the first found in October 1991 and the most recent in December 2019. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) performance. Most of the pennants act as continuations of the prevailing price trend. That means price drops into the pattern and exits down, or the reverse, an upward trend and upward breakout. Only in bull markets after downward breakouts do we see reversals happening more often than continuations.

Reversal/continuation performance. Mapping performance shows continuation patterns outperforming reversals in three of four columns. The exception is after upward breakouts in bear markets, but the numbers are close.

Table 48.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	949	207	728	222
Reversal (R), continuation (C) occurrence	24% R, 76% C	25% R, 75% C	55% R, 45% C	26% R, 74% C
Reversal, continuation performance	5% R, 7% C	11% R, 10% C	–5% R, –8% C	–7% R, –14% C
Average rise or decline	7%	10%	–6%	–13%
Standard & Poor's 500 change	2%	2%	–2%	–5%
Days to trend high or low	9	9	8	8

Average rise or decline. Don't even think of comparing the average rise or decline with other chart patterns (except for flags), due to the way I measured performance (as I explained).

What the table shows is that if you trade the pattern perfectly and often enough, you won't make very much. Bear market performance is better than bull market performance, so keep that in mind.

Standard & Poor's 500 change. This table shows the influence of the general market trend on performance. That's really hard to prove, but if the general market is rising, it tends to lift all boats. Similarly, a falling market sucks boats down. Notice that the S&P lost 5% in bear markets and pennants with downward breakouts in that market performed the best of the four columns.

Days to trend high or low. This measure shows the average time price took to reach the trend high or low after the breakout. On average, you can make 10% in about 2 weeks (bear market, up breakout) if you trade pennants perfectly and often enough. That's

not too bad. Of course, you won't trade it perfectly and probably not 207 times, either, so your results will vary.

I removed **Table 48.3** because failure rates don't make much sense when you're looking at the move to the trend end versus the ultimate high or low (for other chart patterns).

Table 48.4 shows breakout-related statistics.

Breakout direction. The breakout direction favors upward breakouts in bull markets and downward breakouts in bear markets. I like how that makes intuitive sense, even though the percentages are close to random.

Table 48.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	57% up	48% up	43% down	52% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 7%, M 7%, H 7%	L 13%, M 8%, H 10%	L –8%, M –6%, H –5%	L –15%, M –12%, H –5%
Performance with breakout day gap	7%	11%	–5%	–15%
Performance without breakout day gap	7%	10%	–6%	–12%
Average gap size	$0.41	$0.45	$0.67	$1.07

Yearly position, performance. The best performing pennants occur within a third of the yearly low. Yes, the bull market after an upward breakout shows a tie, but the others prefer the yearly low. Downward breakouts do worst if the breakout is within a third of the yearly high.

Gaps. I measured performance from the breakout price (the opening price the day after the gap) to the trend end. The performance

difference between gaps and no gaps is negligible except for downward breakouts in bear markets. If the stock shows a breakout day gap, performance improves enough to be worth considering them.

Table 48.5 shows pattern size statistics.

Height. Tall patterns perform substantially better than short ones. The largest difference occurs for pennants in bear markets after downward breakouts. To measure height, I used the pennant only (not including the flagpole), from highest peak to lowest valley and divided by the breakout price. Those with values greater than the median shown in the table for their respective markets and breakout directions were tall.

Table 48.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	9%	13%	–8%	–17%
Short pattern performance	4%	7%	–4%	–9%
Median height as a percentage of breakout price	4.2%	6.7%	4.3%	7.3%
Narrow pattern performance	6%	10%	–6%	–10%
Wide pattern performance	8%	11%	–7%	–15%
Median width	7 days	8 days	6 days	6 days
Short and narrow performance	4%	8%	–5%	–7%
Short and wide performance	5%	6%	–3%	–10%
Tall and wide performance	10%	14%	–9%	–19%
Tall and narrow performance	8%	13%	–7%	–13%

Width. Wide pennants perform better than narrow ones, but the performance difference is small except for downward breakouts in bear markets.

For example, pennants in bull markets with upward breakouts and a length narrower than the median saw price climb 6% after the breakout. Wide pennants climbed an average of 8%.

Height and width combinations. Looking at the combinations of height and width, we find that pennants both tall and wide

outperform the other combinations. That makes sense because each column shows performance improves if a pattern is tall (one test) and wide (another test). You'll want to avoid short patterns.

Table 48.6 shows volume-related statistics.

Volume trend. Volume trends downward in the pennant most of the time. Don't throw away a pennant because volume trends upward. You may be tossing away a better performing pennant.

Rising/Falling volume, breakout day volume. A rising volume trend over the length of the pennant suggests better performance after a breakout (bull markets, upward breakouts show a tie, but the other columns do better). Heavy breakout volume predicts better performance on average.

Table 48.7 is supposed to show how often price reaches a stop location. Because I measure the move from the breakout to the trend end (the next nearest minor high or low), a straight-line run, the stop location will not trigger until after the trend ends. So I removed the table from this chapter. It's not meaningful.

Table 48.8 shows the performance over three decades using the breakout to trend end performance measure, not the move to the ultimate high or low (just a reminder). Because bear markets only occurred in the 2000s, they are not included in the statistics.

Table 48.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	86% down	92% down	88% down	86% down
Rising volume trend performance	7%	12%	–7%	–14%
Falling volume trend performance	7%	10%	–6%	–12%
Heavy breakout volume performance	8%	11%	–7%	–13%
Light breakout volume performance	6%	10%	–6%	–12%

Table 48.8 Performance Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	10%	–9%
2000s	7%	–6%
2010s	4%	–5%

Performance was best in the 1990s and worst in the 2010s.

Table 48.9 is supposed to show busted pattern performance, but it doesn't apply to pennants, so I don't show it (less work for me. Yippee!).

Trading Tactics

Table 48.10 shows trading tactics for pennants.

Measure rule. Use the measure rule to help predict a price target. Figure 48.6 shows an example. The trend starts at point A and climbs to the pennant. Take the difference between the top (intraday high) of the pennant at its start (B at 10.69) and the trend start low (point A, at 7.50) to get the flagpole height of 3.19. Add this value to the intraday low at the pennant end (point C at 11.44, the day before the breakout) to get the price target (14.63). Price climbs to the target 3 days after the breakout.

How often does this work? Page back to the Results Snapshot at the start of this chapter. You'll see that the measure rule (percentage meeting price target) works between 32% and 46% of the time. It performs worse in bull markets than in bear markets, but it's still well below what I like to see. It's more accurate to say it doesn't work the majority of the time. I'll refine that assessment in Table 48.12.

Table 48.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Calculate the price difference between the start of the trend and the start of the pennant. Price should move at slightly less than this amount above (for uptrends) or below (for downtrends) the end of the pennant.
Wait for breakout	Take a position in the stock once price closes outside the pennant boundary.
Close out trade	Close out the trade when price stalls, usually as it approaches the measure rule target or a support/resistance zone.

Wait for breakout. Since pennants do act as reversals occasionally, it is best to wait for the breakout. A breakout occurs when price closes outside the pennant boundary. Only then should you take a position in the stock. Do not procrastinate, because delays may be costly. You may wish to place a trade at the pennant trendline boundary to get into the trade faster, but it's more risky (false breakouts). A more

conservative approach is to wait for price to close above the top of the flagpole (assuming price in the flagpole trends up and the pennant slopes down).

Close out the trade. Price should move in the direction of the prevailing price trend (Table 48.2 says about 75% of the time except for one column), usually following a slope similar to that before the pennant. When price falters (pauses) after several days (7 calendar days is the median) of quick price movement, sell (or be prepared to sell).

Table 48.11 shows how pennant tilt affects performance.

I checked performance of the pennant depending on the pattern's tilt. For example, Figure 48.3 has a downward tilt and Figure 48.6 is upward. I didn't count those with horizontal tilts like that shown in Figure 48.4.

The numbers show that downward tilts outperform those with upward tilts after upward breakouts. The reverse is true for downward breakouts: Upward tilts work best in that situation.

Table 48.12 shows special features of pennants. That's not really true. It's more special measurements I made associated with pennants.

I measured the price and time moves before and after the pennant but for only two configurations: rising price trend, upward breakout, downward pennant tilt (top portion of the table) and falling price trend, downward breakout, and upward tilt (bottom portion).

Let's talk about the top half of the table, and you can apply the same logic to the lower portion of the table.

Time move. The flagpole lasted 11 days, on average, but the move after the pennant was 9 or 10 days. So the pennant will appear slightly (55%) beyond midway in the time trend.

Price move. The average price rise in the flagpole in bull markets was 19%. That compared to an after-pennant move of 14%. On a percentage basis, the pennant is past the midway point (58% along, where 50% means midway).

Multipliers. This item uses the results of the prior rows to figure out how much to multiply the flagpole to get a better estimate of how long

and how far the stock might move.

Table 48.11 Pennant Tilt

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tilt up, performance	5%	9%	–7%	–15%
Tilt down, performance	7%	11%	–6%	–13%

Table 48.12 Special Features

Description	Bull Market	Bear Market
Rising price trend, upward breakout, downward pennant tilt		
Flagpole days	11	11
Breakout to trend end, days	10	9
Flagpole price move	19%	25%
Breakout to trend end, price move	14%	20%
Time multiplier	48%	45%
Price multiplier	42%	44%
Falling price trend, downward breakout, upward pennant tilt (below)		
Flagpole days	10	11
Breakout to trend end, days	9	9
Flagpole price move	17%	22%
Breakout to trend end, price move	14%	23%
Time multiplier	47%	45%
Price multiplier	45%	51%

For example, suppose you see a pennant with a flagpole height of $5 in a stock trading at $26. The flagpole is 5/26 or 19% of the current

price. I know from the table that the move after the flagpole is 14% along a combined height of 19% + 14% or 33% high. So 14/33 is 42%.

If I take 42% of $5 and add it to the breakout price, I should get a better estimate of how far price might rise. If the breakout is at $25 (price retraced a dollar in the pennant before breaking out upward), the target would be 25 + $5 × 42% or 27.10.

How long will it take to reach the target? Say it took 11 days to rise to the top of the flagpole. The time multiplier is 10/(11 + 10) or 48%. So I'd take 48% of 11 days (or 6 days, rounded up) and that's what I would add to the breakout date. If it's a weekend, then you're on your own.

Experience

Let me tell you about what I found in my trade review.

Coherent

It's one thing to lose money, but to do it quickly always bugs me. Like this pennant trade in Coherent (COHR), shown in **Figure 48.5**.

I found an event pattern called an earnings flag. The stock made a breakaway gap up on stronger than expected earnings. The flagpole begins at A and ends at B. Price retraced and made a pennant pattern, not a flag.

Figure 48.5 Here's a quick way to lose money trading a pennant.

Here's my notebook entry for the trade: “6 February 2004. I bought, filled at 30.30 and 30.39. This is an earnings flag trade. I waited for a retrace because of a weak general market. Price may retrace further, but I expect a renewed climb.

“Downside is 50% retrace to 27.50—28. That is also the site of the August–November 2003 peaks. Expect a rise to 35. This could stall at 34 according to point and figure chart. At 35, this goes up against a long-term down trendline from the March, July peaks in 2000.

According to the 1-2-3 trend change rule, the stock is poised to move up. It pierced the down trendline [1], retested the low [2], and is now breaking out to new highs [3]."

I bought at C, the day the stock broke out upward from the pennant, or what would become a pennant (shown as the two diagonal and converging trendlines). I may have thought the 3-day move after B formed the pennant. If that was the case, the pennant broke out downward, reversed, and busted the downward breakout at C.

A week later, I was scribbling in my notebook again: "12 February 2004. The Dow [industrials] was up 123 points yesterday, and this stock hardly moved. Today, it has broken out downward from a pennant. Time to cut the loss. I'll sell at the market open tomorrow. This stock did not do as I expected, so it's time to sell."

I sold at D and lost 4% in 8 days. The stock dropped, pulled back to E, and then continued lower.

As an earnings flag trade it was a dud, not because I lost money, but because the stock failed to climb after the earnings announcement formed the pennant. However, you can see that price bottomed in December and climbed to A where earnings were announced. That's a big move by the smart money before the company let everyone else in on the news. So how much was left to push the stock higher? Price gapped up and then became quicksand.

- Lesson: In this case, waiting for price to close above the top of the flagpole would have avoided the trade and the small loss.
- Lesson: If a stock does not do what you expect, then exit. Fast.

Duriron

The company was called Duriron (DURI) when I bought it, but it's now called Flowserve (FLS). Let me describe how I botched the trade in the stock. You can use me as a cautionary bedtime story for the kids: Don't try this at home.

The stock made a strong but sedate push upward that lasted over a year. Price peaked in September 1995, moved sideways for 3 months, and then dropped in a fast move down. It bounced back up to the bottom of that 3-month sideways move and formed the pennant. In

other words, overhead resistance was blocking an upward move. Wish I'd recognized that at the time.

- Lesson: Look for underlying support and overhead resistance to better gauge how far price might move.

From my notebook: “14 January 1996. The stock is forming a pennant formation. The measure of this is $4. This also happens to be on the bottom of the trend channel. I am going to buy and pray. If the pennant succeeds, this should give me about a [tidy] profit. Should I continue to hold for the duration of the channel swing, the profit could [double]. The stop-loss level, at $22.25, is just below the low of the recent dip. I think this might be a better channel play than a pennant play.”

The day I bought is the day the stock broke out downward from the pennant.

- Lesson: Sell on an adverse breakout.

Three days later, I wrote, “I expect to be stopped out of this stock tomorrow as it closed at 22 3/4 and my stop is for 22 1/4. There is a lesson here, and that is, if the formation and your expectations of its performance go wrong, sell it. In this case, the pennant formation broke down on high volume when the stock dropped 3/4 of a point after purchase. I should have sold as the formation's volume indications were now wrong.”

A week later, 23 January, I wrote: “I was stopped out of the stock today at $22. I lowered the stop by 1/8 point from 22.25 to 22 1/8. The decline seems to have caught me. As I watched the stock each day, it rose in the morning and fell in the last hour (except today: it sank from the beginning). It looked to me like manipulation as some mutual fund sold shares in the afternoon, forcing the price down for whatever reason. Well, I should have sold the stock after the pennant broke down. Instead, I now have a loss. Live and learn.”

- Lesson: Never lower a stop-loss order.

I took a loss of 15% in 8 days and made several mistakes along the way. The stock bottomed on the day I sold and five days later, started

closing higher, forming a new uptrend. The stock continued rising and pushed well above the top of the pennant, to end where it peaked back in September 1995.

Sample Trade

Consider the situation illustrated in **Figure 48.6**. The pennant obeys the identification guidelines shown in Table 48.1. The pennant looks odd because price trends upward in the pennant instead of declining. In that regard, the pennant is unusual, but it is still a pennant.

A key to this trade is the flat base. It started in early 1999, and a portion of it appears in the figure. Many technical traders look for this type of situation—a heavy volume breakout after a long horizontal move. They say that the longer the base, the more powerful the move up. Based on this example alone, I would have to agree.

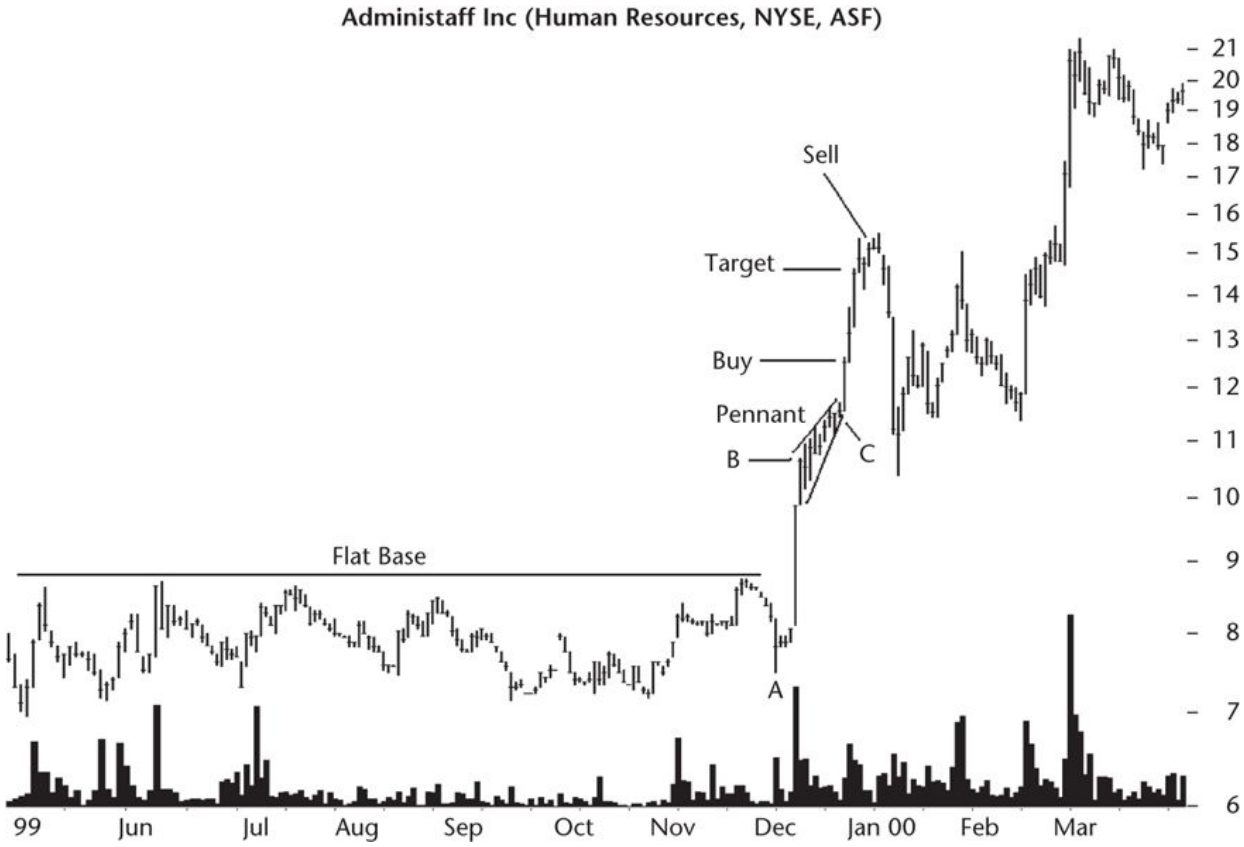


Figure 48.6 Use the measure rule to predict a price target. Take the difference from the low at point A (the trend start) to the high at B (the pennant start) and project it upward from the low at C (before the breakout).

You can see how price punched through the base's ceiling on high volume and then coasted higher, forming the pennant. Once price

shot out the top (a close outside the pennant trendline), the stage was set for a trade.

Many technical traders would have entered this trade on the breakout from the base (when price closed above the base's top), allowing them to profit on the ride up. Using the pennant as a measure rule sell signal would be a bonus (if it worked as a half-staff pattern and we know it only does less than half the time).

Suppose you saw the pennant form and watched price break out upward. The next day, you would buy at the market open, filled at 12.53, which was also the intraday low.

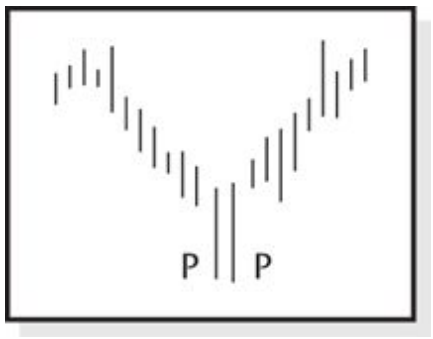
Price rises toward the measure rule target of 14.63 (see the measure rule explanation in Trading Tactics for the numbers). Stay in the trade as price makes higher highs. You can place an order to sell near or at the target so the market will take you out automatically. That order usually results in selling near a minor high and gives you a higher profit than trying to time it yourself.

In this case, since price was trending up, stay in the trade. When price closed lower and made a lower high, that was the sell signal. Sell at the market open the next day, 14.69, which just happened to be the intraday low. That strategy would give you a profit of 17% in just 4 days for this trade.

After completing the throwback (where price returned to the pennant), the stock continued higher, reaching a high of 44.56 in mid-September 2000 (not shown) for a rise of over 400% above the base top.

Clearly, not all trades work out as well as this one. The key is getting into the trade at a low price and exiting in a timely manner (near the top). A delay of just a few days and you would be selling into the downdraft as price tumbled back toward the pennant.

49
Pipe Bottoms



RESULTS SNAPSHOT

Appearance: Two adjacent and unusually long downward price spikes on the weekly chart plunge below the surrounding weeks.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Intermediate-term bullish reversal	Intermediate-term bullish reversal
Performance rank	3 (last) out of 3	2 (last) out of 2
Breakeven failure rate	8%	8%
Average rise	54%	33%
Volume trend	Downward	Downward
Percentage meeting price target	77%	60%
See also	Horn bottoms	

After researching the performance of horn tops and bottoms, the natural thing to consider is removing the intervening week and testing the pattern again. That idea led me to discover pipes.

I conducted an in-depth study of pipe bottoms on *daily* price charts and was disappointed. The statistics showed that daily pipes had a failure rate of 18% with an average gain of 33%. Almost half of the

patterns (45%) had gains less than 20%. However, there were a number of large winners: Almost a quarter of the daily pipes (23%) had gains over 50%.

I saw potential.

I began to believe that an investor trading daily pipes would either pick a pattern that failed or one that had such a small gain as to be unprofitable. I discarded the research and looked at the *weekly* chart.

Pipe bottoms on the weekly scale have a low failure rate and a high average rise. Even so, performance ranks last out of three pattern types on the weekly scale. Because this pattern uses the weekly scale, the search for the ultimate high overlooks situations that would stop the search and reduce the average rise when applied to the daily scale. Thus, the numbers are not comparable to chart patterns on the daily scale.

Tour

Figure 49.1 shows a pipe bottom and the price appreciation that results. The chart is on the weekly scale, and you can see that price began dropping in mid-October 1993, down to the start of the pipe. Volume picked up during the left pipe spike and was even higher the following week. The two downward price spikes, of almost equal length and overlapping, mark a turning point, a signal that the decline was over.

From the low, price moved up smartly and reached a new high in early November, a climb of almost 120% in just 9 months. For this chart pattern, such large gains are not unusual. Almost 35% of pipes in bull markets have gains over 50%.

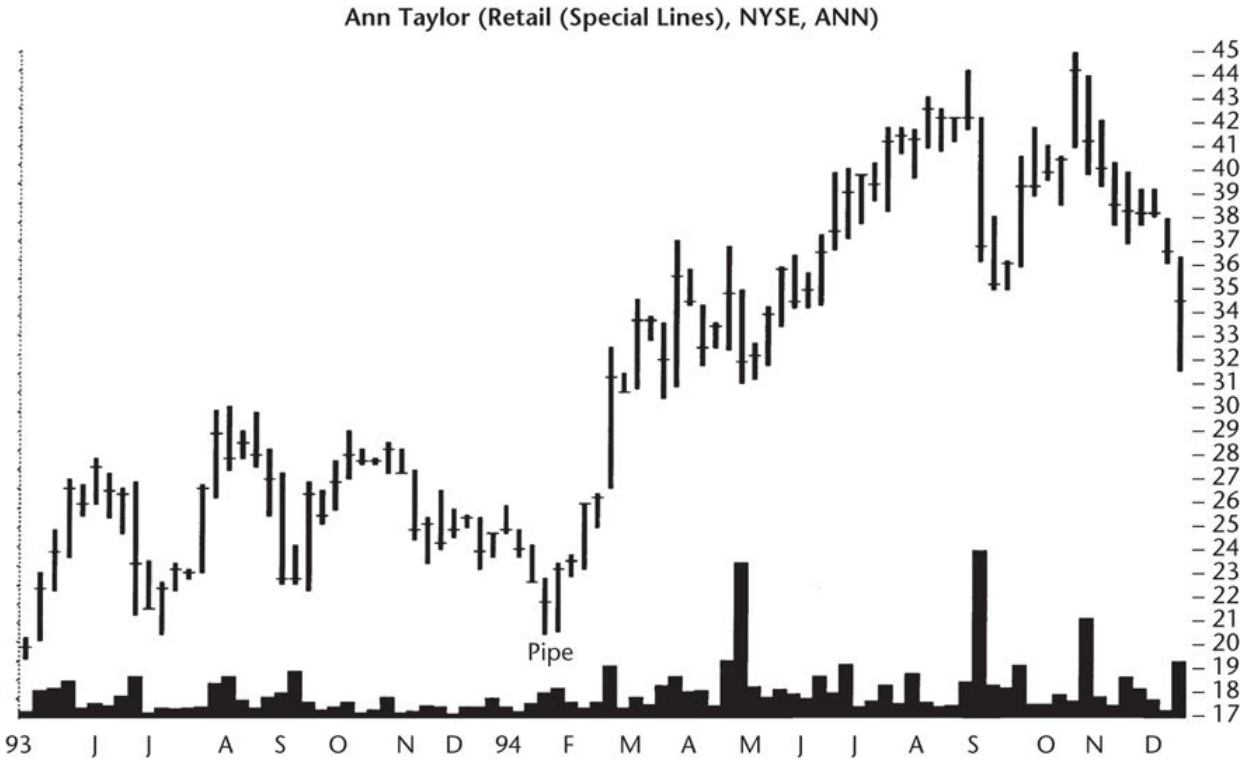


Figure 49.1 A pipe bottom on the weekly chart. Pipes commonly form after a retrace in an uptrend or at the bottom of a prolonged downtrend.

Identification Guidelines

How do you correctly identify pipe bottoms? **Table 49.1** outlines the identification guidelines. Although there are a number of them to consider, they are really quite obvious. Look at the pipe shown in **Figure 49.2**.

Appearance. The pipe bottom looks like a railroad spur sticking below the surrounding price track. Look for two adjacent price spikes, which are obvious because they drop far below the surrounding weeks (Figure 49.1 shows a better example of how obvious a pipe bottom should look).

Weekly chart. Use weekly charts to find pipes. Although pipes appear on daily charts, they do not perform as well as pipes on weekly charts, probably due to how I measure performance.

Two downward adjacent spikes. Two adjacent downward price spikes compose the pipe bottom, and it looks like two parallel lines on the chart.

Perhaps the most critical feature of a pipe bottom is what happens in the third week. While you can easily spot two adjacent downward price spikes, toss the pipe aside if price does not rise the third week. The third week, the week following the second pipe spike, should leave a well-defined dual spike visible on the price chart. The 4-week pair (which includes the weeks before and after the pipe) is V shaped and is even clearer when combined with a downward price trend.

Table 49.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for price to form a twin spike bottom, one that drops well below the surrounding weeks.
Weekly chart	Pipe bottoms on the daily price chart exist, but pipes on the weekly charts perform better. Use the weekly chart.
Two downward adjacent spikes	Locate two downward price spikes that are next to each other.
Large spikes	The price spikes should be unusually tall in the pipe, taller than most downward spikes during the year. The pipe should stand alone as the prior week and the following week have low prices that are near the pipe highs.
Large overlap	The 2 weeks composing the pipe should have a large price overlap between them.
Volume	Not a prerequisite, but most pipes show above-average volume on at least one or both spikes.
Obvious pipe	The pipe should be obvious on the chart, otherwise look elsewhere. The best performing pipes appear at the end of downtrends.
Breakout direction, confirmation	Price must close above the top of the tallest spike to break out. The pattern confirms as a valid pipe bottom when it breaks out upward. If price closes below the lower of the two spikes first, then it's not a pipe bottom.

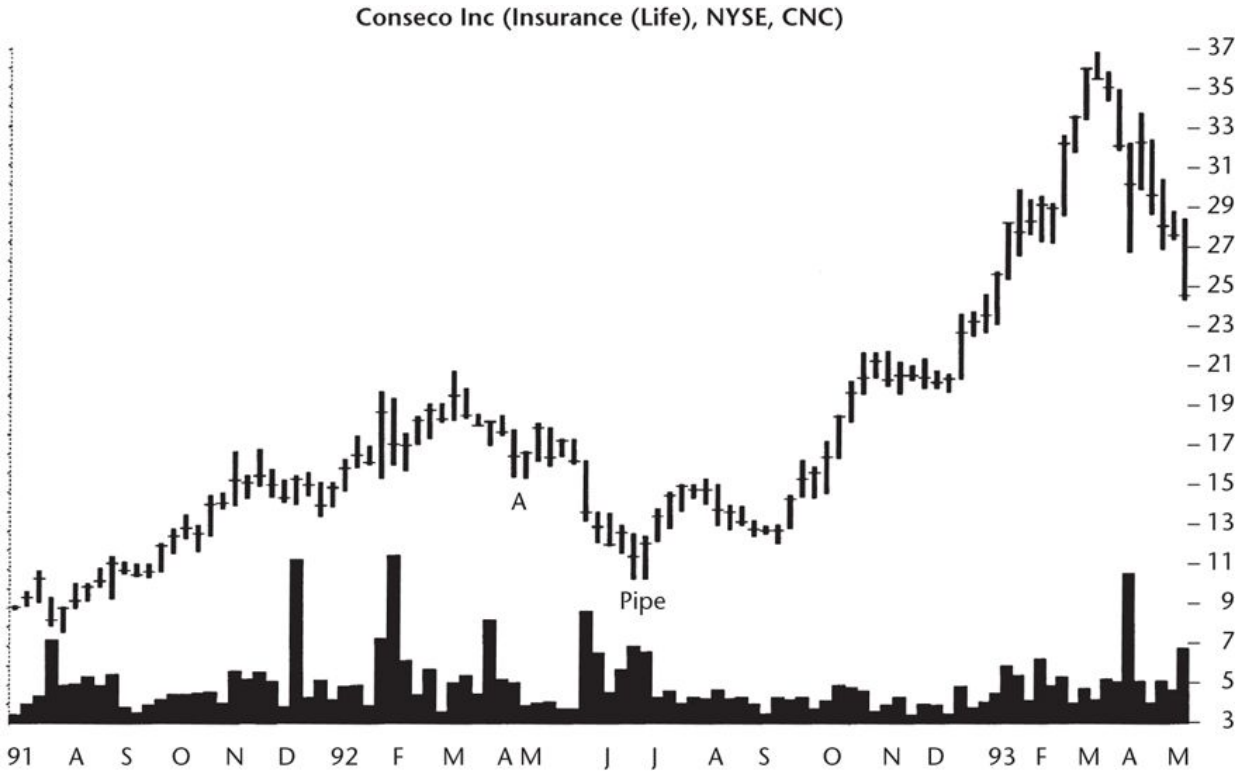


Figure 49.2 A pipe bottom on the weekly chart. Point A is another pipe bottom with less spectacular results.

Large spikes. The pipe spikes should appear as a large price drop and tall price range for 2 weeks in a row. The week before and after the pipe should have low prices near the top of the pipe. This characteristic makes the pipe stand out on the price chart as an easily recognizable pattern.

Think of a hilltop covered with trees. You're looking for two pines, next to each other, which tower well above the others. Flip the image of the hilltop upside-down, and that's what pipes should look like.

For example, the pipe shown in Figure 49.2 has a prior week low of 11.63, somewhat near the left pipe high of 12.56 (certainly well above the low of 10.31). The right side does even better. It sports a low of 12.25, near the right pipe high of 12.50.

Each spike decline (two in the pipe) should be unusual. The length should be well above the average downward spike length over the past year. It must appear as a large decline on the price chart, not just another 2-week blip in a sea of long downward price spikes.

Large overlap. The pipe has a large price overlap. This is clear in the figure because the left side of the pipe is just slightly taller than the right side. As a selection guideline, what you do not want to see is a large left side and a short right side. However, uneven spike bottoms is a good thing (see Table 49.11), so take your pick.

Volume. Volume for each pipe spike is usually above average but need not be. Do not exclude a pipe simply because it does not obey the typical volume characteristics.

Obvious pipe. The pipe must be unusual enough to catch your eye. Typically, pipes form at the end of a decline and mark the turning point, such as that shown in Figures 49.1 and 49.2.

If you look closely at Figure 49.2, you should be able to see another pipe. I have made it easy for you by marking it as point A. The pipe is not quite as well defined as the other pipe, and the price appreciation is certainly not as spectacular. Price rises from the right pipe low of 15.38 to a high of 18.13 before price resumes its downward trend.

Breakout direction, confirmation. The twin bottom pattern confirms as a pipe bottom only when price closes above the highest high in the pattern. Do not invest in a pipe without confirmation.

Focus on Failures

Pipe bottoms have only one type of failure: the 5% failure. A 5% failure happens when price does not move higher by more than 5% before reversing trend. **Figure 49.3** shows two such failures.

The two pipes in April and May 1993 show good definition. They look like pipes, but they do not act like pipes. After the pipes complete, price should move up smartly, but it heads lower instead.

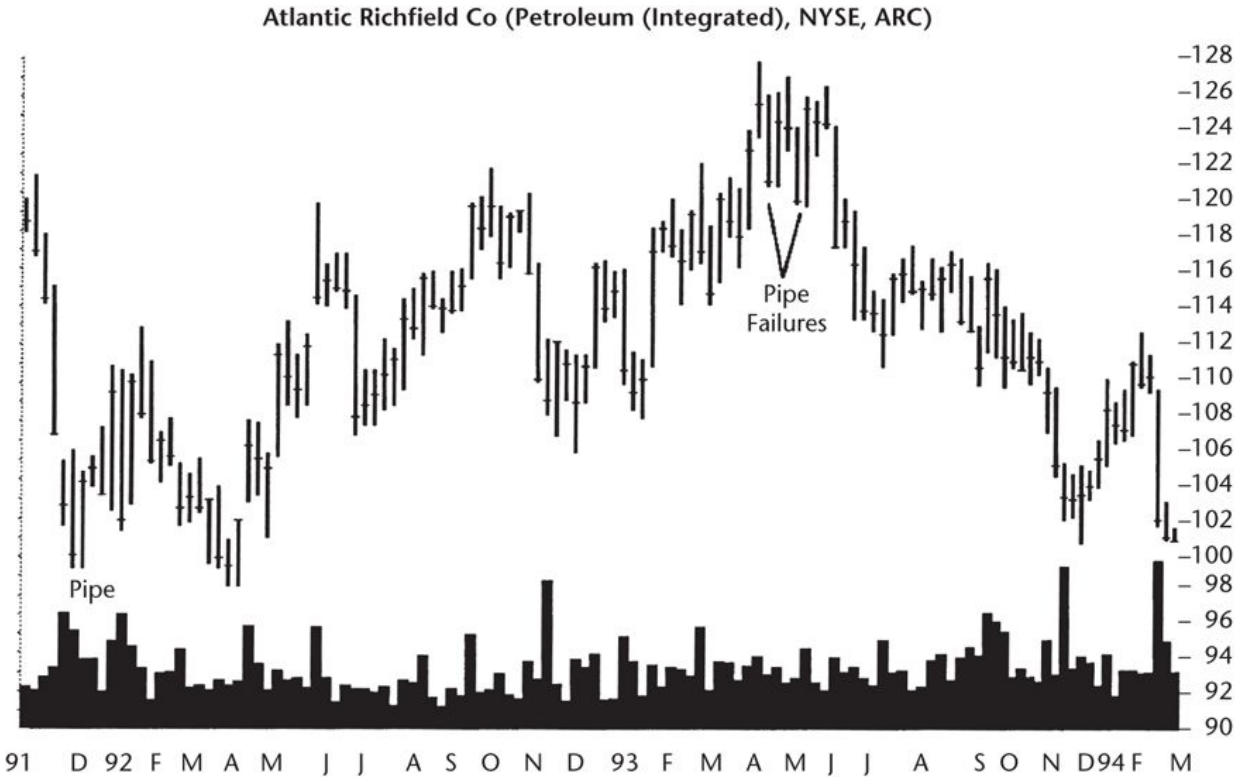


Figure 49.3 Pipe bottom failures (weekly chart). Clues to these two pipe failures are in the spike lengths and volume trend. The best performing pipes form when price is trending down. The two pattern failures are not pipes at all because price does not close above the highest high in each pattern.

Why?

Volume on the left spike of both pipes is below the monthly average. However, the right side shows higher-than-average volume in both pipes. Still, the volume pattern is unconvincing, because it usually appears most brisk at pipe bottoms.

As a contrast, look at the pipe on the far left of the chart. Both spikes show volume that is well above average.

Another clue to the two pipe failures lies buried in the guidelines outlined in Table 49.1. Price should drop unusually far during the 2 weeks, *more than most downward spikes during the year*. As you look at the chart, you can see several downward, 1-week spikes (December and February, for example) that nearly equal the length of the two pipes. The entire chart seems filled with ragged price spikes of varying lengths. For this reason, you should be skeptical of investing in these two pipes.

The big indicator of pipe failure is because the pipes are not pipes at all. Price does not confirm either pipe (which happens when price closes above the highest high in the pattern). Thus, an astute trader would not trade these patterns.

Incidentally, before we leave Figure 49.3, it is a good time to illustrate a somewhat common feature of pipes. Since pipes often appear at the end of a downward price trend, price sometimes rises, loops around, and retests the low. The pipe in early December 1991 is an example. Price bounces up, rounds over, and falls back on itself, forming a new low at 98.13. The retest of the original low completes in late March.

Pipe bottoms exhibit support at their lows. Rarely does price drop more than a half point or so below the pipe low before recovering and beginning an extended upward trend. The half point is not an absolute rule because it depends on the price of the stock (the one shown in the chart is a $100 stock, and it drops $1 below the prior low).

So even though you may buy into a stock above the top of the pipe and watch price fall, hold on. Use common sense, though. Sometimes you can lose a lot of money by holding on too long.

Statistics

Table 49.2 shows general statistics.

Number found. I found a whopping 11,572 pipes in 1,279 stocks with the first one in July 1991 and the most recent in October 2018. Not all stocks covered the entire period, and some stocks no longer trade. I think I got fed up with searching for these things.

Reversal (R), continuation (C) occurrence. Pipe bottoms are, by definition, reversals of the downward price trend because price breaks out upward after the pattern. If price doesn't breakout upward, then it's not a pipe.

Table 49.2 General Statistics

Description	Bull Market	Bear Market
Number found	8,826	2,746
Reversal (R), continuation (C) occurrence	100% R	100% R
Average rise	54%	33%
Standard & Poor's 500 change	13%	2%
Days to ultimate high	176	98
How many change trend?	63%	52%

Average rise. The average rise in bull markets is a huge 54%! In bear markets, pipes perform less well, rising an average of 33%. Trade this pattern in bull markets for the best results.

Standard & Poor's 500 change. In both bull and bear markets, the index climbed. A rise in bear markets can occur because the results depend on what happens to the index from the date of the pipe breakout to the ultimate high. You might say that the general market helped the individual stocks perform, as in a rising tide lifts all boats. That's a cliché, but it fits the situation.

Days to ultimate high. It takes a long time (6 months in bull markets) to climb 54%, which is nearly the same speed as the bear market needs to rise 33% in 98 days.

How many change trend? Patterns on the weekly scale seem to outperform on this measure. This item is a count of how many pipes see price rise by more than 20% after the breakout. I consider values above 50% for bullish patterns to be a good number. This pattern passes.

Table 49.3 shows failure rates for pipes.

Table 49.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	684 or 8%	212 or 8%
10	968 or 19%	431 or 23%
15	851 or 28%	344 or 36%
20	749 or 37%	318 or 48%
25	564 or 43%	283 or 58%
30	556 or 50%	218 or 66%
35	465 or 55%	162 or 72%
50	1,032 or 66%	328 or 84%
75	1,109 or 79%	224 or 92%
Over 75	1,848 or 100%	226 or 100%

How do you read the table? Let me share a few examples. In bull markets, 8% of pipes will fail to rise more than 5% after the breakout. The failure rate doubles in the next row and is triple the breakeven rate at 15%. In other words, 28% of patterns will fail to see price rise more than 15%. Bear markets are even worse, as one would expect, for a bullish pattern fighting against a bearish tide.

Use the table to estimate how likely it will be to meet your cost of doing business and any profit margin you want to maintain. For example, say your cost is 5% and you want to make 15% on each trade, for a 20% total.

How many patterns fail to rise more than 20%? In bull markets, 37% will fail and in bear markets, the results are worse, with 48% not exceeding a 20% threshold.

Table 49.4 shows an abbreviated breakout-related statistics table. I don't show throwbacks because they must happen in less than a month (four price bars on the weekly scale, making them scarce), nor gaps, which are rare on the weekly scale.

Breakout direction. By definition, the breakout is upward from a pipe bottom. If price closes below the bottom of the pattern before closing above the top of it, then you don't have a valid pipe bottom.

Yearly position, performance. Where in the yearly price range do the best performing pipes occur? Pipes with breakouts within a third of the yearly low perform best. You'll want to avoid the other two ranges. This pattern seems made for bottom fishers, people who like to buy low and sell high (as opposed to momentum traders who buy high and sell higher).

Table 49.5 shows size statistics for the pipe pattern. Tall patterns perform better than short ones, continuing a trend shown by many other chart pattern types. In bull markets, for example, tall patterns see rises that average 61%, which is well above the 48% gain posted by short patterns.

To determine what is short or tall, compute the height of the pipe pattern from the higher of the two pipe spikes to the lower of the two. Divide the height by the price of the higher of the two spikes (the breakout price). If the result is bigger than the median shown in the table, then you have a tall pipe.

Table 49.6 shows volume statistics for pipes.

Volume trend. The volume trend is near random, but tilts toward downward. That means the left spike will show higher volume than the right one. Does it matter if it does or doesn't? Let's find out.

Table 49.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 62%, M 49%, H 53%	L 37%, M 33%, H 29%

Rising/Falling volume. If the left spike in the pipe shows higher volume than the right one (so volume falls), performance improves in bull markets. Bear markets don't seem to care much, but favor a rising volume trend.

Breakout volume. Pipes with breakout volume above the 1-month average tend to outperform, and quite substantially, too. Bear markets show the same trend, but performance is nearly the same.

Table 49.7 shows how often price reaches a stop location. A stop placed at the top of the pattern will trigger in two out of three trades (or more). I measured this by seeing how far price *dropped* on the way to the ultimate high. After price reached the ultimate high, I stopped the search and that accounts for why the hit rate isn't higher (which is to say, I expected the values to be higher than that shown).

The numbers suggest that placing a stop below the bottom of the pipe will keep a trade safe most of the time, but check to see if the stop is too far away from the buy price. Should the stop trigger, you don't want to lose too much and suffer an asthma attack.

Table 49.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	61%	36%
Short pattern performance	48%	30%
Median height as a percentage of breakout price	12.2%	15.3%

Table 49.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	55% down	54% down
Rising volume trend performance	53%	34%
Falling volume trend performance	56%	33%
Heavy breakout volume performance	57%	34%
Light breakout volume performance	52%	33%

Table 49.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	66%	71%
Middle	26%	25%
Pattern bottom	7%	6%

Table 49.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	53%
2000s	60%
2010s	46%
Performance (above), Failures (below)	
1990s	8%
2000s	6%
2010s	10%

Table 49.8 shows the performance of pipe bottoms over three decades. I only show bull markets because bear markets happened only in the 2000s. They are not included in the statistics.

Performance over time. The 2010s showed the worst performance of the three decades. I wonder if the popularity of the pattern is a cause for the performance decline. I introduced pipes to the world in the first edition of this book (2000), and performance has dropped since. I've heard that once the market learns of a winning setup, it stops working. I don't know if that's true, but it makes me wonder.

Failures over time. Failures mirror performance. The 2000s had the best performance and also have the fewest failures. The 2010s had the worst performance and the most failures.

You might guess that there's a relationship between performance and failures, and I thought there was until I started seeing weird results (such as high performance with lots of failures or low performance with few failures, that kind of thing).

Table 49.9 shows busted pattern performance.

Busted patterns count. In bull markets, over a thousand patterns bust. That sounds huge, but it's only 16% of the pipes I tested.

Table 49.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	1,398 or 16%	505 or 18%
Single bust count	785 or 56%	386 or 76%
Double bust count	429 or 31%	64 or 13%
Triple+ bust count	184 or 13%	55 or 11%
Performance for all busted patterns	–22%	–25%
Single busted performance	–24%	–27%
Non-busted performance (pipe tops)	–19%	–24%

Busted occurrence. Of those pipes that bust, most single bust followed by double and triple+ busts (more than two busts), in that order. That may sound like it's the proper sequence, but I've seen triple+ busts come in second place in a number of other chart patterns.

Busted and non-busted performance. I used pipe tops as the proxy for pipe bottoms with downward breakouts. Busted pipes outperform pipe tops in both bull and bear markets. I'm not a fan of shorting a stock, but if you see a pipe bottom that busts, consider shorting it.

Trading Tactics

Table 49.10 shows trading tactics.

Measure rule, targets. The measure rule is a guide (not a rule, really) that traders use to set a price target. To use it, compute the height of the pipe from the higher of the two spikes in the pattern to the lower of the two spikes. Add the height to the taller of the two spikes to get a target price.

The bottom portion of the table shows how often price reaches the target based on various heights used in the computation. If you use the full height, price will reach the target 60% or more on average. Cut the height in half, add it to the breakout price, and the success rate climbs to 84% or higher.

Table 49.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Subtract the highest high from the lowest low in the pipe (to get the pattern's height) and add it to the highest high. The result is the target price. The bottom portion of the table shows the success rate of the measure rule using various heights.
Downward trend	Many of the best performing pipes show a downward price trend leading to the pipe. Pipes often occur at the bottom of a retrace in an upward price trend or mark the end of an extended price decline.
Wait for confirmation	Wait for price to close above the highest high in the pattern.
Buy	After a pipe bottom passes the identification characteristics shown in Table 49.1 (including confirmation), buy the stock.
Stop location	Pipes form a support zone, but price sometimes dips up to a half point below the pipe low (weeks or longer after confirmation), so use that as your stop-loss point. Raise your stop as price climbs.

Description	Bull Market	Bear Market
Percentage reaching half height target	90%	84%
Percentage reaching full height target	77%	60%
Percentage reaching 2× height	56%	33%
Percentage reaching 3× height	43%	20%

Once you know the target, convert the move into a percentage of the current price and compare it to Table 49.3. For example, if price is expected to climb by $5 in a stock current trading at $50, that's a 10% move. Table 49.3 says (you have to listen closely) that 19% of pipes will fail to see price rise more than 10% in bull markets. That's reasonable. It means you have an 81% chance of making a decent profit if you trade it properly.

Downward trend. A downward price trend is usually where you will see pipe bottoms, at least the best performing ones. Price moves down, reaches the pipe bottom, then turns around and starts climbing. Figures 49.1 and 49.2 are good examples of this behavior.

Wait for confirmation. The pipe confirms as a valid pattern when price closes above the taller of the two peaks in the pipe, which usually takes 2 to 3 weeks to occur. That interval gives enough time for the pattern to show good visibility on the right side of the pipe, meaning that it should look like a well-defined pipe with price rising after the pattern ends.

Even if you miss the breakout, consider trading this pattern. You have an average of 3 to 6 months (from Table 49.2) before price peaks, and with gains averaging 54% in bull markets you should still have plenty of profit opportunity.

Buy. Once you have identified a confirmed pipe bottom on the weekly scale, buy the stock. Since a stock will often retest the most recent low before starting on a sustained journey upward, be prepared for it.

Stop location. Place a stop-loss order half a point (to allow room for the retest to drift below the pipe low) below the lowest pipe (but use your best judgment, depending on the price of the stock, of course). If the stock hits the stop, then price is probably going to continue down. In such a case, close out your position and send a letter home to Mom asking for more money.

Table 49.11 shows one feature of pipes with a performance difference worth noting.

I measured the price difference between the bottoms of the two spikes in the pipe and divided by the breakout price. The median difference was small, as one would expect (1% or 2%).

If the difference was greater than the median, the pipe tended to outperform in both bull and bear markets, which is reassuring.

Table 49.11 Special Features

Description	Bull Market	Bear Market
Median pipe difference as percentage of breakout price	1%	2%
Difference > median, median performance	32%	22%
Difference <= median, median performance	29%	20%

What does this mean? As you look at your pipe, if the bottom of the two spikes do *not* share the same price (or aren't even close), then expect better performance. It might not happen, but that's the way to bet.

I checked other configurations of volume and spike length and so on, but this is the only idea showing promise.

Experience

Let me tell you about what I found in my trade review.

EMC

EMC (EMC) showed a pipe bottom in 2004. I bought the week after the pipe confirmed and again after a throwback completed (switching to the daily scale, for the second trade).

I scored the pipe and found it was +2 (for details, see my book, *Trading Classic Chart Patterns*, Wiley, 2002), meaning the pattern had a good chance of meeting the target price for the stock (not the measure rule target). I didn't log what the scoring system said for the target, but my target was 12 (with an entry price of 10.53).

The stock climbed but stalled just short of the prior high as it encountered overhead resistance.

It was time to sell.

General market weakness forced the stock down, and it hit my stop. It took me out of the trade at 13.53. I made 28% on the first trade and 23% on the second. The stock continued lower, to 11.10 in just over 3 months for a drop of 18% from my sale price.

In this case, the entry was perfect. The exit was a bit late, but I sold near the top. I don't see anything wrong with these two trades.

Hercules Inc.

In Hercules Inc. (HPC), the stock formed a pipe bottom in 2007 as part of a retrace in an upward price trend. According to my spreadsheet of trades, I made a perfect entry and perfect exit. I bought the stock the third week after the pipe ended. However, looking at the chart and reading my notes, I called it a *potential* pipe bottom because it hadn't confirmed when I bought it. Fortunately, it confirmed later that week.

- Lesson: It's best to trade only confirmed chart patterns.

I placed a volatility stop and continued to raise it as price climbed.

When the general market (Dow industrials) slid over 500 points over two days, the receding tide sucked me out of the trade (price hit my stop) for a small profit. Here's what I wrote about the exit: “Lesson: If this is a short-term trade with a price target, set a limit order to sell at the target or maybe sell half at the target and ride the rest higher.”

Had I done that, I'd have made a bit more. I like the idea of selling a portion of the position at the target and holding the rest for additional gains.

- Lesson: For short-term swing trades, set a limit order to sell at the target price.
- Lesson: For short-term swing trades, consider selling a portion (like half) of the position at the target and holding onto the rest to see if price continues to trend in your favor.

Hi-tech Pharmacal

Hi-tech Pharmacal (HITK) in 2007 was like I was asking to be taken to the woodshed and beaten to a pulp. My notes on the analysis of the company and the setup were filled with warnings. The company settled a patent lawsuit by paying $2.5 million (I don't like to find litigation notes in company reports), and one brokerage firm called it a strong sell. Another had me pen this comment: “The worst star scores I've ever seen.” Plus, it was thinly traded, which I don't like.

- Lesson: If the shares you wish to trade make up more than 1% of average daily volume, then the stock is too thinly traded. Look elsewhere.

There were positive indications about a winning trade, too. The stock was sitting on a shelf of support. The commodity channel index (CCI, an indicator) said buy the prior day. The chart pattern had a +2 score with a target of 15.42, above the buy price of 12.30.

My uneasiness about the stock made me cut the position size in half.

- Lesson: Worried about a trade? Cut the position size.

I did not wait for confirmation of the pipe bottom (it didn't appear to confirm on either the daily or weekly scales). Instead, I bought the day after price made a strong move up on the daily scale.

I placed an order to sell on the close if my conditional stop order hit. And it hit the day after I bought, handing me a 6% loss for a holding time of one day.

I consider myself fortunate that I took such a small loss. The stock continued lower, but not in a straight line. The 2008 bear market took the stock down to 3.46 or 70% below where I sold.

- Lesson: Wait for confirmation before buying.
- Lesson: If the stock busts an upward breakout from a chart pattern, sell immediately (or certainly consider selling).

Spansion

I left the best trade for last. In 2008, I flirted with the semiconductor industry and bought Spansion (SPSN). It seems every time I buy a semiconductor stock or chip maker, I lose money.

The pipe appeared, and it looked good. It showed on the weekly chart after the stock had gone down for a year, suggesting a turn in the stock was overdue. Fundamentals of the company said they had a book value of over $12 a share with the stock selling at $4. So it was a good value play (based on that one measure). The industry was weak (poor relative strength versus other industries).

The pipe confirmed, and I bought into the stock.

The stock eased lower, so I bought more to average down. Even with two buys, it was a small position for me.

Eight months later, my notes are talking about bankruptcy, so I sold the position for a loss.

What happened to the stop? It was right there, in my notes. Because the stock was inexpensive, volatility is often high, so I had a stop set for a potential loss of 18%. That's significantly higher than the 8% or less I like to use. And beside the stop figure appeared these fateful words: “Stop used: None.” That means I never placed the stop.

How big was the loss? Answer: 72%. Wow. That's heart-stopping. But on a dollar basis, it was very small because I kept the position size down.

- Lesson: If the loss reaches 10%, then *consider* selling (reevaluate the situation and the reasons for buying). A drop of 20% or more means the stock is in its own bear market and it's going down. It should be an automatic sell.
- Lesson: Not placing a stop-loss order because the size of the loss is too big means the trade should be abandoned anyway.

Sample Trade

One way to learn how to trade pipe bottoms is to review what Peter did. Peter is one of the more intelligent software engineers I know. Not only is he smart, but he is personable as well. He is very helpful and friendly unless management turns the screws and demands that work actually be done on time. Then the pressure seeps in and tempers flare. When the pressure gets too intense and Peter feels the need to take a break, he does not take a walk as most other people might do. Instead, he invests in the stock market. Since he has an Internet connection in his office, he is online in just seconds.

The situation shown in **Figure 49.4** intrigued him. Price had been moving horizontally since April 1992 (a portion of that isn't shown, so use your imagination), forming an extended base on which an upward breakout of significant proportions would evolve, he hoped.

Over the shorter term, price began trending down in mid-January 1994. It reached a low the week of 4 April, accompanied by above-average volume. Had this downward price spike been alone, it might have signaled a one-day reversal (one-week reversal really, since we are on the weekly scale). However, another downward spike appeared the following week. Price did not drop to the low of the prior week (38.38) but came close at 38.63.

The dual spikes were long enough to set them apart from the surrounding price action, certainly longer than the brief, 1-week dip in mid-March. The following week price moved up smartly, leaving a clear pipe bottom visible on the chart. When price confirmed the pipe, Peter bought the stock and received a fill at 42.

“I set a stop at 37.88, or 12 cents below a whole number, and you know why, right?”

He placed the stop there because whole numbers sometimes act as support (or resistance). Placing the stop just below 38 would give the stock every opportunity to turn around and move higher.

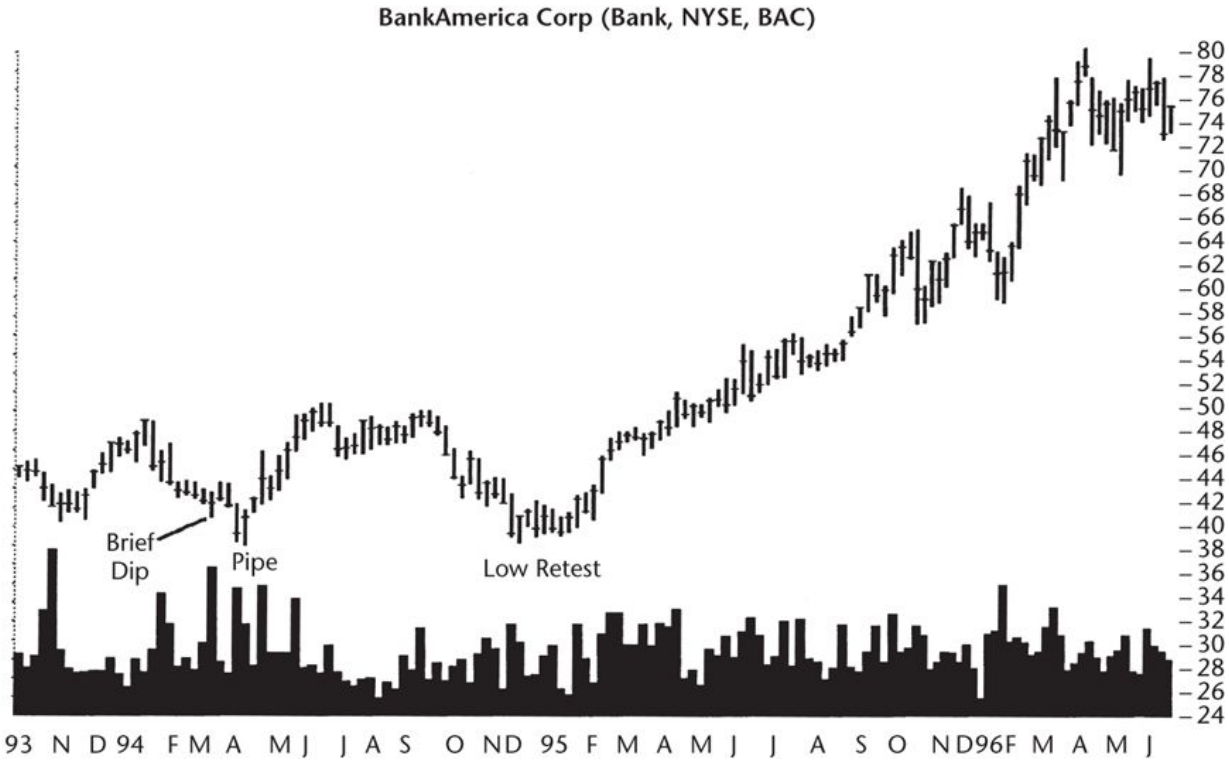


Figure 49.4 Pipe bottom with preceding brief price dip and following low retest (weekly chart). As described in the Sample Trade, Peter bought this stock the week after the pipe completed and sold it for a 71% gain 2 years later.

As Peter watched the stock, he was pleased that it was working out so well. “The real test would be when the stock approached the top of its trading range.”

Over the prior 2 years, it had reached a high of 55.50 and a low of 40.50. If you exclude 3 months when price shot higher and then fell back down, the range was tighter, with a high about 49. “The keys were 49 and 55.50. If price pierced those levels, then the stock would probably continue moving up. Or so I hoped. I watched the stock, and when it hit 50.25 and fell back, I knew this run was not the one that would send the stock higher.”

Price crumbled again. “I crossed my fingers and hoped that it was only a retest of the low and not the start of a new downtrend.”

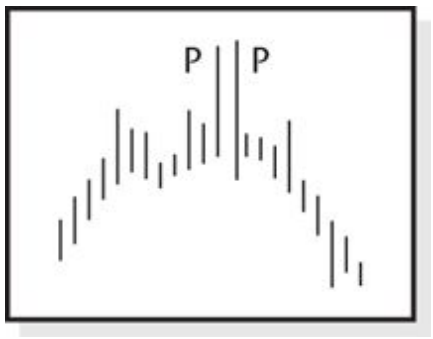
During late November, price reached a low of 38.63, tying one of the pipe lows. Then price moved modestly higher. “That's when I doubled my position. Averaging down.”

In early February 1995, price broke out of its congestion zone and zoomed higher. From that point on, there was no looking back.

Price continued rising in an almost straight-line bead until April 1996. Then, after setting a new high (80.38), price backtracked. Expecting a retrace in an uptrend, Peter held onto his shares. “I watched the shares sink, and when they reached 72, I threw up my hands and sold. And you know what happened next? The sucker dipped to 69.95 before rising again. Turns out I sold the blasted thing too soon.”

Still, he made $30 a share or 71% in about 2 years.

50
Pipe Tops



RESULTS SNAPSHOT

Appearance: Two adjacent and unusually long upward price spikes on the weekly chart rise above the surrounding weeks.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	1 (best) out of 2	2 (last) out of 2
Breakeven failure rate	13%	5%
Average decline	19%	24%
Volume trend	Downward	Downward
Percentage meeting price target	54%	55%
See also	Horn tops	

From the statistics given in the Results Snapshot, pipe tops perform better in bear markets with a large average decline and tiny failure rate. That finding makes sense because pipes are bearish chart patterns usually found near the end of an uptrend or in the midst of a downtrend.

The pattern ranks first or second, which is terrific if we're competing against dozens of other chart pattern types. However, pipes use the

weekly charts and the only other bearish chart pattern on that scale is a horn top. The first-place finish in bull markets is actually a tie with horns, too.

Let's take a tour to see what this pattern looks like.

Tour

Figure 50.1 (weekly scale) shows what pipes look like and how they perform. There are three pipes shown in the figure, all of them tops, all warning of an impending trend change. The pipe on the left occurs while price is still rising and acts as part of the consolidation of the trend. However, the pipe is not a pipe at all because the pattern does not confirm—price does not close below the pattern's low before closing above the pattern's high.

The center pipe pattern really marks the turning point for the stock. It towers above the surrounding hillside, and price on either side of it falls away. The resulting pattern looks like an upside-down V.

The pipe on the right is the last one before price really begins tumbling. It flags the last chance to exit an existing position or place a short at a good price. From the high at 39.25, price tumbles to below 13 by the end of this chart—a 67% drop.

Identification Guidelines

Table 50.1 outlines the guidelines for correctly identifying pipe tops, and Figure 50.2 shows an example.

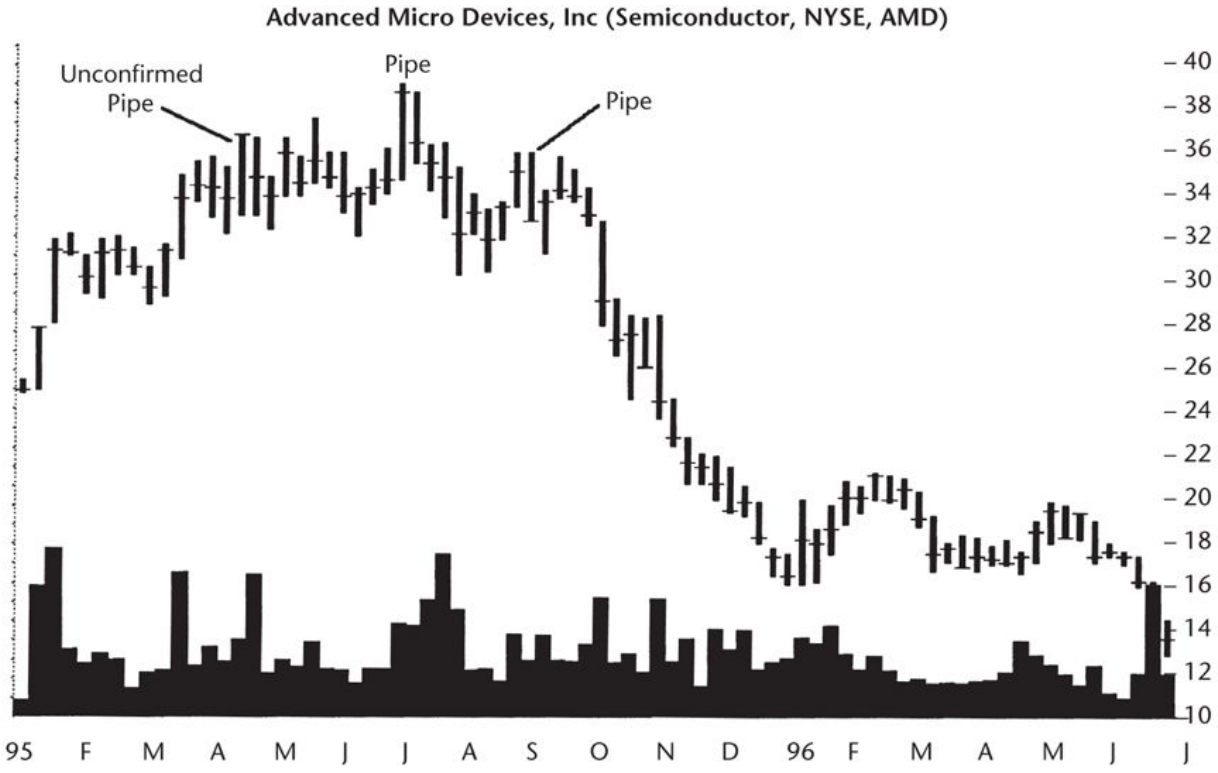


Figure 50.1 The pipe on the left is not a pipe at all because price does not close below the formation low before rising above the top. Note: Weekly scale.

Table 50.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for price to form a twin spike peak, one that towers well above the surrounding weeks.
Weekly chart	Pipe tops on the daily price chart exist, but pipes on the weekly charts perform better. Use the weekly scale.
Two upward adjacent spikes	Locate two adjacent and upward price spikes. The spikes should be unusually tall, taller than most upward spikes during the year. The pipe should stand alone as the prior week and the following week have high prices that are near the pipe bottoms.
Volume	Not a prerequisite, but most pipes (86%) show above-average volume on at least one or both spikes.
Breakout direction, confirmation	Breakout is downward, by definition, when price closes below the lower of the two pipe spikes. When price breaks out downward, it confirms the pattern as a valid pipe top.

Appearance. Pipes are easy to spot on the weekly charts, and they are plentiful. Look for two adjacent upward price spikes like that shown in the figure.

Weekly chart. Pipes appear on any timeframe, but they perform better on the weekly charts. I suggest you confine your searches to those.

Two upward adjacent spikes. The two spikes in a pipe should be consecutive weeks, looking like railroad tracks, a set of parallel price bars. Look for unusually tall price spikes, ones that are taller than many other spikes during the prior year. You want the pipe to stand out.

Volume. We'll see in the Statistics section that volume trends downward. That means the left spike will often have higher volume than the right. Volume will be above the 1-month average on at least one of the spikes 86% of the time.

Breakout direction, confirmation. Pipes break out downward when price closes below the bottom of the pattern (below the lowest pipe spike). If the breakout is upward, then you don't have a valid pipe top.

Always wait for price to confirm the pattern, that is, to break out downward. Never trade an unconfirmed pipe.

If you look at enough pipe tops, you will discover that many form as part of an upward retrace during a downward trend such as that shown in the figure.

The twin highs of the pipe are just 13 cents apart and are well above the surrounding weeks. Except for the spike in mid-March, the price spikes are unusually tall when compared with other spikes throughout the prior year. Since the pipe spikes both share the same low price, the two spikes exhibit a large price overlap, but the amount of overlap isn't critical.

The pipe signals a resumption of the downtrend. In less than 2 months, price drops to a low of 18 before recovering slightly.

Figure 50.2 This pipe top (weekly scale) appears during a retrace in a long-term downtrend, as do some of the best performing pipes.

Focus on Failures

Failures occur when price declines by no more than 5% before resuming its upward trend. Five percent failures do not happen too often in pipe tops, but their occurrence is significant enough to warrant a review of the situation.

Many failures happen when price is trending up. The uptrend ranges from several months to over a year, and the pipes seem to signal a coming trend change. Sometimes they do and price drops, but by no more than 5%. At other times, the drop is more severe, but it may happen in 2 to 5 months in the future. In between the pipe and the drop there are higher prices.

Sprinkled among the uptrend failures are those related to downtrends. A pipe failure in a downtrend usually appears near the end of a long downtrend or shortly after the downtrend ends and price begins recovering. Instead of an upward retrace in a downtrend, the pipe marks the turning point for higher prices.

Consider **Figure 50.3**, a pipe top in a stock that has been moving sideways for about a year. Upward breakouts from these long, flat consolidation areas typically mark the beginning of a long rise, as in this case. For many chart patterns, there is one overriding rule: There must be something to reverse.

You can see that the consolidation region narrows over time, reminiscent of a long, symmetrical triangle. Even the volume pattern supports the triangle by receding most of the way. Since the boundaries of a symmetrical triangle mark lines of support and resistance, the possible decline from the pipe base to the triangle boundary is just 5%, not a very compelling investment. In essence, there just is not much of a climb to reverse.

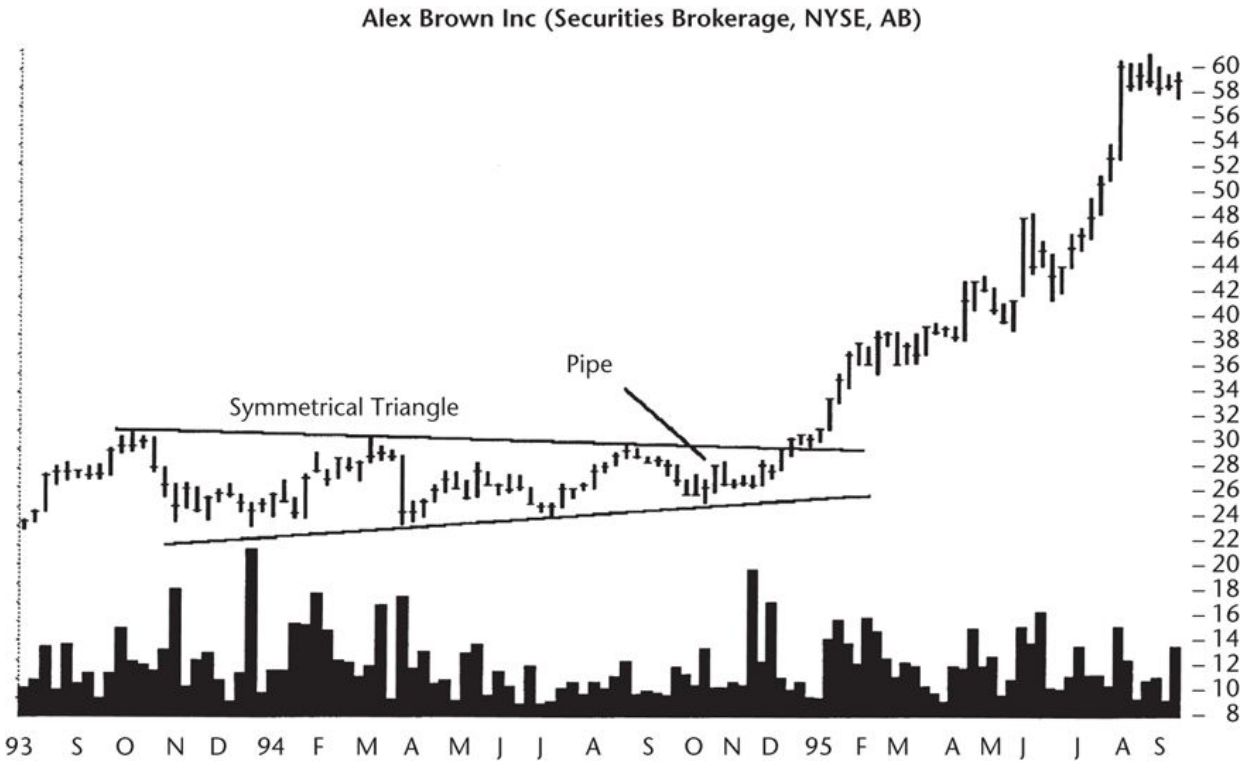


Figure 50.3 This pipe top forms near the end of a long symmetrical triangle on the weekly chart. An investor should wait for a downward breakout before trading any pipe top. The pipe never confirmed as a valid pattern.

However, in all fairness, if the pipe correctly predicted a downward breakout from the triangle, I would be telling you a different story. Since it is difficult or impossible to predict the breakout direction from a symmetrical triangle, it is best to wait for the actual breakout. If investors had waited for price to close below the pipe, they could have saved themselves from a loss (because the pipe never confirmed as a valid pattern). The pipe shown in the figure is a failure of price to decline. Price reached a high of 60.75 in September, more than double the price where the pipe formed.

Statistics

Table 50.2 lists general statistics for pipe tops.

Number found. I dug up 5,412 pipe tops in 1,176 stocks with the first starting in July 1991 and the most recent in November 2018. Not all stocks covered the entire period, and some no longer trade. Pipes are plentiful (and all were on the weekly charts).

Reversal (R), continuation (C) occurrence. A pipe top acts as a reversal of the prevailing price trend when price enters the pattern from the bottom and leaves by a downward breakout.

Table 50.2 General Statistics

Description	Bull Market	Bear Market
Number found	4,001	1,411
Reversal (R), continuation (C) occurrence	100% R	100% R
Average decline	–19%	–24%
Standard & Poor's 500 change	–2%	–9%
Days to ultimate low	53	39
How many change trend?	38%	52%

Average decline. It's difficult to gauge how well a 19% drop is compared to other chart patterns because only horn tops and pipe tops appear on the weekly scale with downward breakouts.

Let's think about the decline from a different perspective. Is a 19% (bull market) or 24% (bear market) drop large enough for you to want to sell an existing holding? Of course, the results shown are averages and your pipe may result in a smaller (or larger) drop. Swing traders may drool at capturing such a decline, but buy-and-hold investors may yawn.

Standard & Poor's 500 change. Tracking the performance of the S&P using the same hold time from breakout to ultimate low as the pipes shows that the market declined along the way. The market decline helped the individual stocks drop.

Days to ultimate low. The average decline in bear markets is 24% and takes 39 days. In bull markets, the decline is 19% and takes 53 days. Thus, the bear market decline is faster than the bull market one. Doing the math, we find the bear market decline is 1.7 times faster than the bull market drop.

How many change trend? This is a count of how many pipes see price drop more than 20%. Values for *bullish* (not pipe tops) patterns over 50% I consider terrific, but I don't have a gauge for bearish patterns. Clearly the bear market number is wonderful, and the bull market rate isn't bad, either.

Table 50.3 shows failure rates for pipes (this sounds like something to do with plumbing). Notice that the failure rates in bear markets are lower than are those in bull markets. For a bearish pattern, that's no surprise.

Let me provide a few examples so you understand how to read the table. In bear markets, 5% of the pipes will fail to see price drop more than 5%. That rate more than triples in the next row when we see 19% fail to see price drop more than 10%. Almost half of the patterns (48%) won't exceed a 20% drop.

Notice how the failure rates climb for declines of 5%, 10%, and 15%. The rapid increase in failures for small price changes is typical for chart patterns. It emphasizes the risky nature of chart pattern trading and the difficulty of making large gains.

Table 50.4 shows breakout-related statistics.

Table 50.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	522 or 13%	76 or 5%
10	782 or 33%	194 or 19%
15	659 or 49%	209 or 34%
20	520 or 62%	197 or 48%
25	433 or 73%	170 or 60%
30	326 or 81%	151 or 71%
35	250 or 87%	114 or 79%
50	382 or 97%	188 or 92%
75	123 or 100%	101 or 99%
Over 75	4 or 100%	11 or 100%

Table 50.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –20%, M –19%, H –18%	L –26%, M –25%, H –21%

Table 50.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–21%	–26%
Short pattern performance	–16%	–22%
Median height as a percentage of breakout price	13.0%	16.8%

Breakout direction. Pipes have downward breakouts, only. A pipe top with an upward breakout isn't a pipe top. That reminds me of an old joke: A day without sunshine is like night.

Yearly position, performance. The best performing pipes have their breakouts near the yearly low. You'll want to avoid trading a pipe top near the yearly high, especially in bear markets.

Table 50.5 shows statistics related to pipe height. Tall pipes perform better than short ones. To use this finding, measure your pipe from the highest high to the lowest low in the pattern and then divide by the breakout price (the lowest low). If the result is higher than the median shown in the table, you have a tall pipe. Otherwise, it is a short one.

Table 50.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	58% down	59% down
Rising volume trend performance	–18%	–23%
Falling volume trend performance	–19%	–25%
Heavy breakout volume performance	–19%	–24%
Light breakout volume performance	–18%	–24%

Table 50.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	5%	3%
Middle	22%	16%
Pattern bottom	69%	63%

Because pipes have a defined 2-week width, I don't show any width statistics or performance associated with the combination of height and width.

Table 50.6 shows volume statistics for pipes.

Volume trend. Volume trends lower across the 2-week pattern, but it's close to random. You don't want to discard a pipe top just because volume trends upward.

Rising/Falling volume, breakout volume. In both markets, the performance after rising or falling volume, heavy or light breakout day volume, is not significant enough to worry about. I think technical

analysts place too much emphasis on volume. Some say that if breakout volume isn't unusually robust (above average), then discard the pattern. I think that's a mistake, but the choice is yours.

Table 50.7 shows how often a stop placed at various locations in the pipe will trigger. For example, I found that if you place a stop-loss order at the top of the pipe, it'll hit between 3% and 5% of the time (depending on the market). Move it to the bottom of the pattern and it'll hit much more frequently, as the table shows.

When placing a stop, be sure to check the size of the potential loss. Convert the dollar loss into a percentage of the current price, and if you don't become ill because the potential loss is huge, then maybe it's worth using.

Table 50.8 highlights the performance of pipes over the last 3 decades.

Performance over time. The 1990s showed better performance than more recent decades. However, the returns have been quite stable.

Table 50.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–20%
2000s	–18%
2010s	–18%
Performance (above), Failures (below)	
1990s	11%
2000s	15%
2010s	15%

Table 50.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	1,077 or 27%	184 or 13%
Single bust count	716 or 66%	107 or 58%
Double bust count	59 or 5%	5 or 3%
Triple+ bust count	302 or 28%	72 or 39%
Performance for all busted patterns	48%	28%
Single busted performance	65%	37%
Non-busted performance (pipe bottoms)	54%	33%

Failures over time. Failures were lowest in the 1990s but not much higher over the next two decades.

Table 50.9 shows busted pattern performance.

Busted patterns count. More than one in four bull market pipes will bust. That means a stock showing a pipe will see price drop no more than 10% after the breakout before reversing and closing above the top of the pipe.

Busted occurrence. Bull market pipes have a higher tendency to single bust than those in bear markets. I guess that makes sense because pipes are bearish. They should do better in bear markets.

Busted and non-busted performance. I compared the performance of busted pipe tops with pipe *bottoms* (as a proxy for a pipe top with an upward breakout).

Single busted pipes outperformed pipe bottoms in both bull and bear markets. The problem with trading a busted pipe is that you don't know if it'll single bust or not. So look for overhead resistance that may interfere with a rising price trend. If it's nearby, then ask if you think price will be able to push its way through.

Trading Tactics

Table 50.10 shows trading tactics for pipe tops.

Measure rule, targets. Use the measure rule for pipes to find a price target. Compute the formation height by subtracting the lowest low from the highest high in the pipe. Subtract the result from the breakout price (the lowest low) to get a target.

How often does this work? The bottom portion of the table provides the answer. Using the full height, it works about half the time on average. If you cut the height of the pipe in half and use that in the formula, you'll get a higher success rate: 80% or higher.

Once you know your target, convert the move into a percentage of the current price by dividing the two and checking Table 50.3. For example, say the distance to the target is $5 in a stock with a breakout price of $50. That's a 10% move. Table 50.3 says that in bull markets, 33% of pipe tops will fail to see price drop more than 10%. That means if you were to trade it perfectly and often enough, you'd make money 67% of the time.

Downward trend. The performance of pipes depends on the prevailing price trend. For larger percentage moves, look for pipes that appear as an upward retrace near the start of a decline. Avoid trading those if the decline has been in existence for many months (like almost a year).

Table 50.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the pipe and subtract it from the breakout price. The bottom portion of the table shows the success rate of the measure rule using various heights.
Downward trend	The best performing pipes occur near the start of downtrends. Price bounces up, forms a pipe, and then resumes its downward trend.
Long-term uptrends	If a pipe appears in an uptrend of a year or more, then the pipe might signal a trend reversal (from up to down). Be careful because pipes sometimes are premature by 2 to 5 months.
Uptrend retrace	Pipes often appear in uptrends. They mark short-term weakness where the trend reverses and moves down. These can be profitable short-term moves.
Stop location	See Table 50.7 for guidance.
Tips	See text.

Description	Bull Market	Bear Market
Percentage reaching half height target	80%	83%
Percentage reaching full height target	54%	55%
Percentage reaching 2× height	23%	25%
Percentage reaching 3× height	10%	12%

Long-term uptrends. In long-term uptrends, the pipe might signal the end of an uptrend. Sometimes it is premature by a few months, so do not be in too much of a rush to sell the stock short. At other times, a review of the surrounding price patterns might be rewarding. Double or triple tops sometimes show pipes as part of their tops, calling the turn exactly. Figure 50.1 shows an example of this in a head-and-shoulders top.

Uptrend retrace. For many uptrends, pipes represent periods of short-term weakness. Price will move down for a month or two (sometimes more) before resuming the uptrend. The decline might be 10% to 20% but seldom represents a significant percentage change. For swing traders, pipes can be profitable if you are careful, lucky, and aggressive.

Stop location. Spend some time visiting Table 50.7 to get the probabilities of price reaching a stop placed at various locations in the pipe. Tell 'em Tom sent you.

Tips. A knot is what I call a congestion region of at least 3 price bars long (weeks in this case). Price moves horizontally with lots of price overlap. Knots appear in strong trends where price pauses before resuming the trend.

You want to look for those knots, especially the one closest to the bottom of the pipe on the weekly scale. That knot is your short-term price target.

If the knot is near the bottom of the pipe, then *don't* trade it. The pipe will likely bust (see price break out downward, hit the knot, and reverse to close above the pattern and continue higher). It's a risky trade because it won't give you much room to profit before the stock reverses.

Not just knots will turn price upward, either. Prior peaks or valleys work, too. Look for those as you scan your chart where a pipe top occurs.

- Review knots in Chapter 1 for additional tips on how to use them for trading.

Table 50.11 shows one feature of pipes that's worth mentioning. I computed the difference between the top of the two spikes and found the median, which was 1%. When the difference between the two peaks was more than the median, performance improved. In other words, you'll see a farther decline.

As you search for pipes, look for two peaks that do not share the same price. Indeed, you might wish to look for patterns with a large price difference.

Sample Trade

Johnny is a civil servant working in a state office, and he handles the paperwork for companies just beginning life. Most are sole proprietorships that go bust in a year or two, but there are exceptions. Discussions with customers have helped him spot profitable trends in the stock market and have helped him avoid costly mistakes.

Table 50.11 Special Features

Description	Bull Market	Bear Market
Median pipe difference as percentage of breakout price	1%	1%
Difference > median, median performance	–17%	–22%
Difference <= median, median performance	–14%	–20%

His interest turned to the steel industry when he learned that the federal government was thinking of punishing foreign producers for dumping steel in the United States. He learned about the trend from comments made about how price for steel products was dropping rapidly. Companies using the cheap steel thought the decline was great, but the steel companies did not agree. The bosses at the steel companies started jumping up and down on their favorite politicians.

When Johnny saw the situation depicted in **Figure 50.4**, he formed a unique plan to profit from the pipe top. He measured the percentage gain from the base (point A in the figure) to point B, the first minor high on the weekly chart. The rise was 34%. Then he calculated the amount of the retrace from points B to C, which turned out to be 14%.

As he watched the price climb from point C to the pipe, he whipped out his calculator and discovered that the percentage change was 50%, near the 34% gain of the first push. He suspected and hoped that the pipe top marked the start of a downward retrace that would take price lower, probably around 15% lower, equaling the B to C retrace.

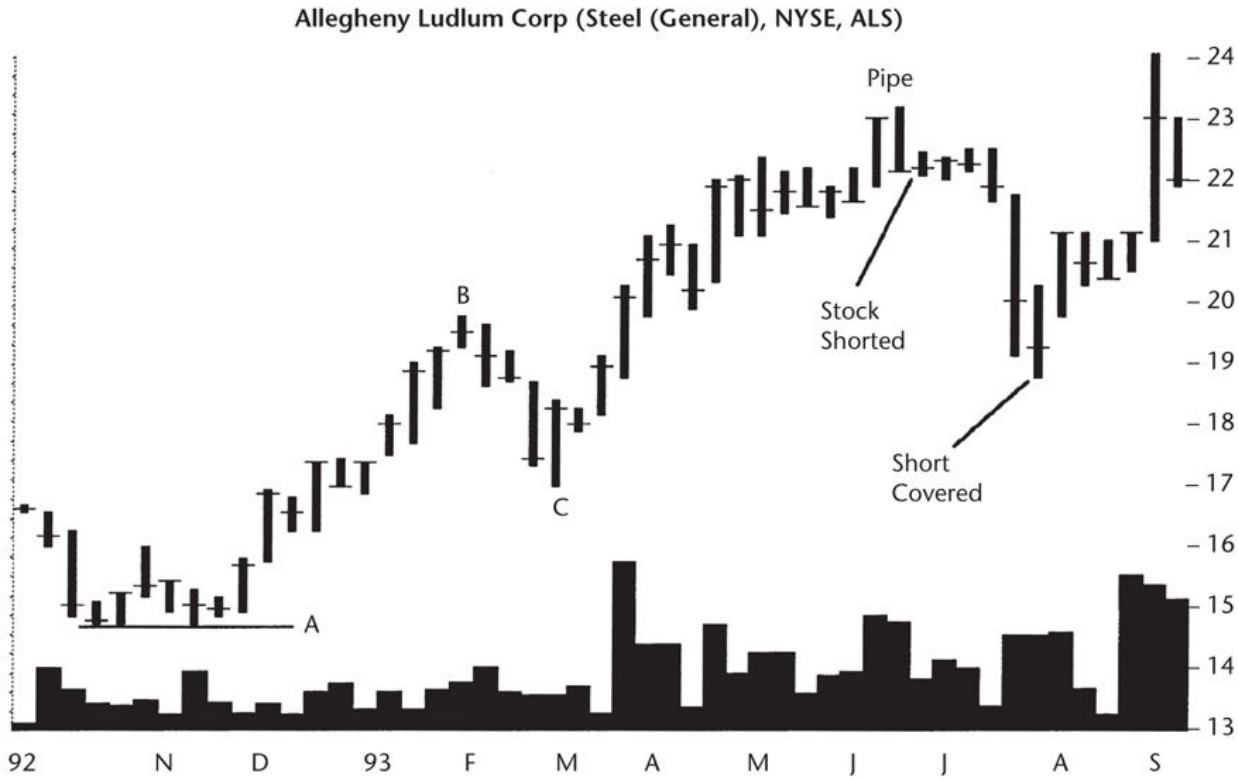


Figure 50.4 This pipe top appeared at the end of a rise–retrace pattern that saw price climb by 35% and fall by 15%. Note: Weekly scale.

"I sold short at 22.25 and put an order to cover if the stock declined by 15% to 19." On the other side, he placed a mental stop-loss order at 23.25, slightly above the right pipe high at 23.19.

The stock moved horizontally for several weeks and then tumbled. When it reached 19, his short was covered and he made about $3 a share in 5 weeks. Meanwhile, the stock bottomed out at 18.75, just below his target and an amount similar in size to the earlier retrace.

Lest you get too excited about this rise–retrace type of trade, let me caution you. Although I have used this maneuver profitably, many times things do not turn out quite so neatly. Be careful and make use of stop-loss orders, especially if you are shorting a stock. Search for support zones to help gauge the ultimate decline.

51
Rectangle Bottoms

RESULTS SNAPSHOT

Appearance: A stock trends down to a region where price moves sideways, oscillating up and down between two horizontal trendlines before breaking out.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	8 out of 39
Breakeven failure rate	15%
Average rise	48%
Volume trend	Downward
Throwbacks	64%
Percentage meeting price target	79%
See also	Flags, measured move down, rectangle tops

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish continuation	Short-term bearish continuation
Performance rank	14 out of 36	2 out of 19
Breakeven failure rate	24%	6%
Average drop	16%	26%
Volume trend	Downward	Downward
Pullbacks	66%	64%
Percentage meeting price target	55%	69%

Like other chart patterns without a classic definition of a top or bottom, I decided to give rectangles a definition by separating them based on the price trend approaching the rectangle. If the trend is downward, then the chart pattern is a bottom. If the trend is up, then the chart pattern classifies as a top.

This chapter concerns itself with rectangle bottoms. Bottoms have two breakout directions: up and down (no surprise, right?). The Results Snapshot lists the more important statistics. You'll notice that statistics for upward breakouts in bear markets are missing. That's because I didn't find enough samples to qualify for a solid statistical presentation.

As performers, rectangle bottoms do well, especially in bear markets after downward breakouts. There, they rank second where a rank of 1 is best for performance. And that's out of 19 types of chart patterns.

Failure rates of 6% are also low, ranking third out of 19 (not shown) where a rank of 1 has the lowest failure rate. That bear market failure rate is one-fourth of the 24% failure rate in bull markets (downward breakouts). Of course, that's expected. When price tries to drop in a rising market, you would expect a high failure rate. Bull markets with upward breakouts show a more respectable 15% failure rate (well above 6% but below 24%).

Let's take a tour of this pattern to see what it looks like.

Tour

Figure 51.1 shows an example of a rectangle bottom. An upward price trend lasted just 3 days leading to the rectangle, but it was too short both in duration and height to be important. The more significant trend is downward, and I consider the decline a few days before the rectangle as undershoot. Undershoot commonly happens just before price oscillates between support and resistance zones.

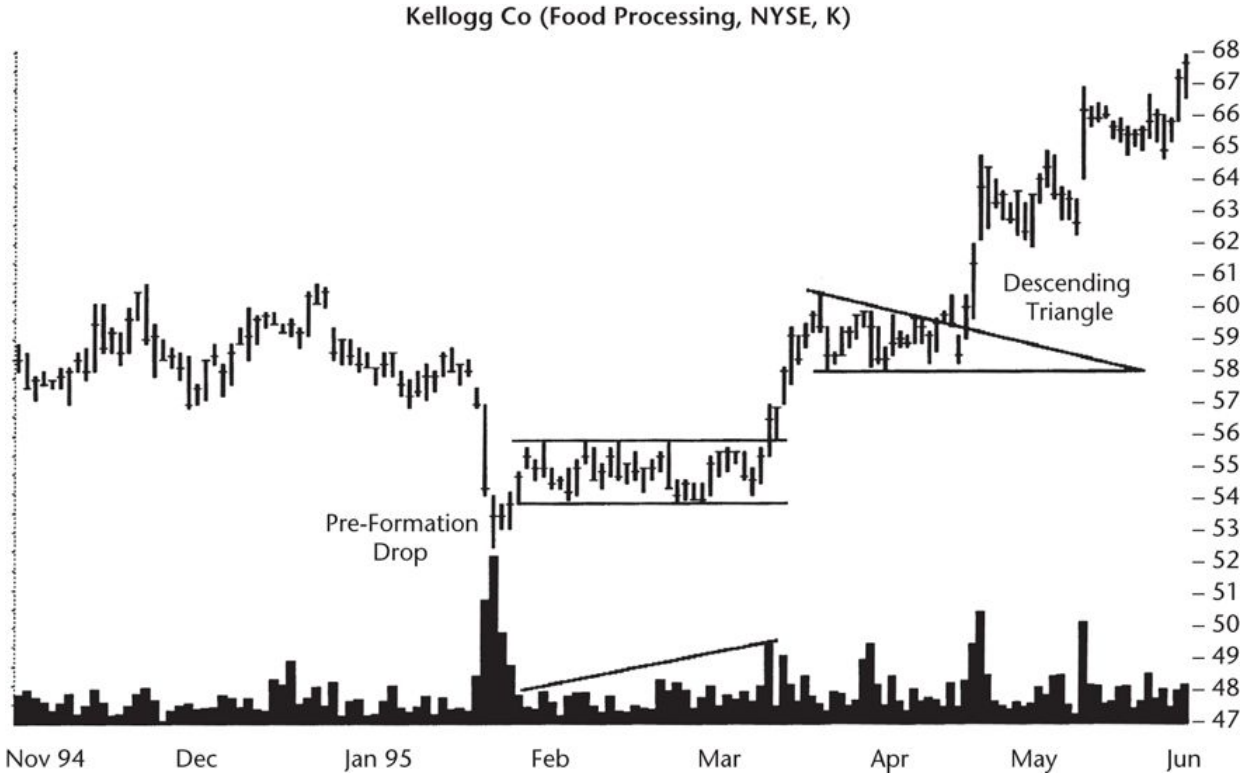


Figure 51.1 A rectangle bottom shows an intermediate-term downtrend leading to the pattern with an upward breakout. After the breakout, price created a descending triangle and burst upward out of that chart pattern, too.

The rectangle bottom formed after price dropped out of a slightly rounded top that began in October 1994 (not shown) and lasted to January 1995. Price dropped quickly from 57 to 52.50, recovered, and bumped up against overhead resistance at 56.

For more than a month, the stock bounced between the two zones (54 and 56) like a ping-pong ball ricocheting off players' paddles. Up and down, up and down price boomeranged on rising volume. After one

player sneezed, the price ball shot past him. Price moved up, pausing only a day before moving higher on heavy volume. The stock climbed quickly after that and entered another congestion zone; this time it was a descending triangle with an upward breakout.

This chart shows what a rectangle bottom should look like if you ignore the undershoot. It's a tight congestion region of horizontal price movement, with the stock touching each trendline multiple times. Very nice, indeed.

Identification Guidelines

Table 51.1 shows identification guidelines for rectangle bottoms. While reviewing the guidelines, consider how they apply to the rectangle shown in Figure 51.2.

Table 51.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price bounces between a region of underlying support and overhead resistance for several weeks, crossing the pattern from top to bottom before breaking out either upward or downward.
Price trend	The prevailing price trend leading to the rectangle is down by definition.
Horizontal trendlines	Two horizontal, or nearly so, trendlines bound price along the top and bottom of the rectangle.
Touches	There should be at least five touches total (three of one trendline and two of another). Price should cross the rectangle plenty of times to fill the whitespace.
Volume	Volume usually trends downward.
Breakout direction	Either up or down. A close outside of the trendline border signals the breakout.
Duration	If the rectangle is shorter than 3 weeks, make sure it's not a flag (a rectangle will not have a flagpole).

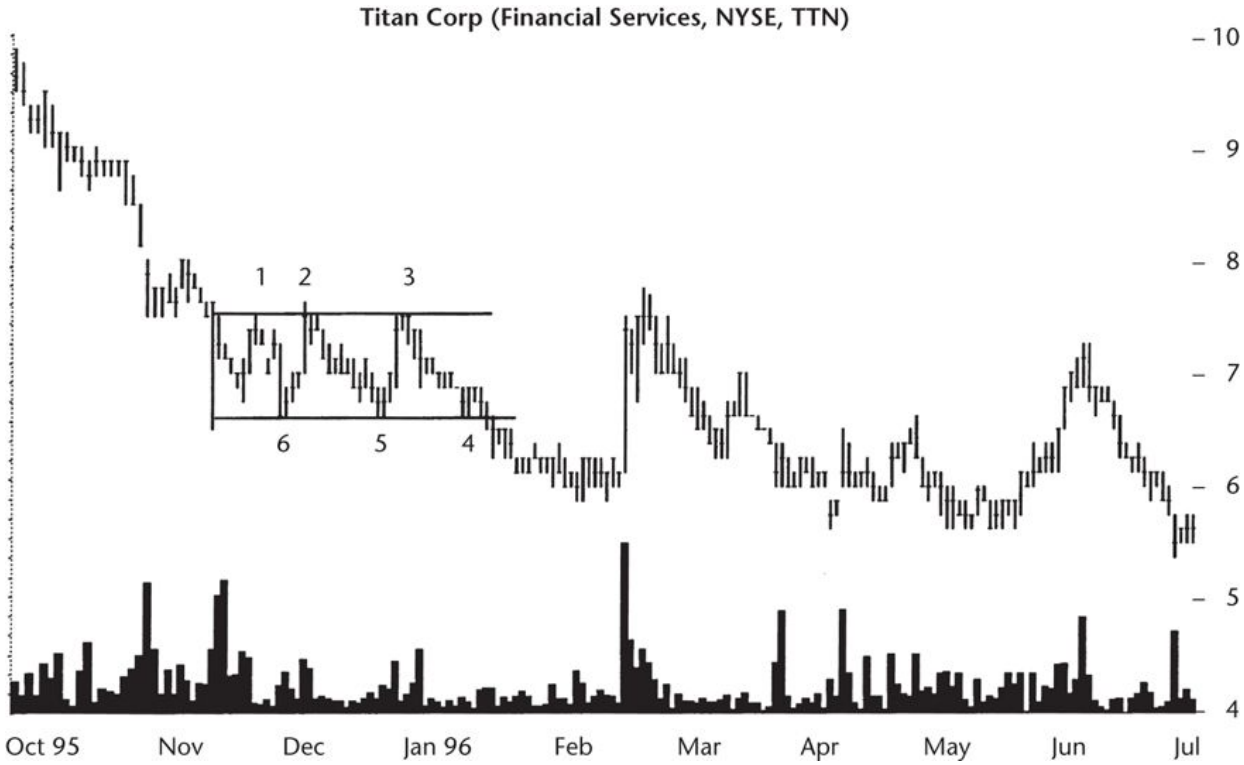


Figure 51.2 A rectangle bottom appears in a downtrend. Price falls out the bottom and then retraces to the rectangle top before moving lower.

Appearance. Price travels horizontally for several weeks, bouncing between underlying support and overhead resistance, forming a rectangle pattern.

Price trend. The price trend leading to the rectangle bottom is downward, which is what separates rectangle bottoms from their top brothers. As shown in Figure 51.1, I ignore overshoot or undershoot (see the Glossary for a definition) before the formation starts, choosing to use the prevailing longer price trend instead.

Horizontal trendlines. Price bounces between two levels, setting up a support zone at the bottom and a line of resistance at the top of the rectangle. If you connect the minor highs with a trendline, it should be horizontal or nearly so. A similar line drawn below the bottoms forms a parallel trendline. The two trendlines bound the price action. Occasionally, one of the lines will not be exactly horizontal or will break near the end, which is fine as long as the slope is not too steep to disturb the overall picture.

Touches. To prevent misidentification, I require at least five trendline touches: three of one trendline and two of the other for a valid rectangle. Each touch should be at a minor high or minor low. The touches can be adjacent (not alternating) so long as it doesn't leave too much whitespace behind.

Figure 51.2 shows three alternating touches labeled with numbers. Except for the brief punch through the top in early December (point 2), price stays within the two boundary lines until breaking out downward on light volume in mid-January.

Volume. In at least two-thirds of the rectangles I looked at, volume trended downward (found using linear regression). Do not discard a rectangle because volume slopes upward. Rectangles with a rising volume trend can outperform, too. We'll see that in Table 51.6.

Breakout direction. Price breaks out of the rectangle when it closes outside the trendline boundary. The direction can be either up or down, but favors an upward breakout in bull markets and downward ones in bear markets.

Duration. I like to see rectangles at least 3 weeks long to avoid confusion with flags, but patterns shorter than 3 weeks are fine providing they are not attached to a flagpole.

Focus on Failures

Figure 51.3 shows a rectangle bottom in a downtrend. The pattern has two trendline touches on the top, several on the bottom, price moves horizontally, filling the whitespace with price movement ... all of which says it's a valid rectangle bottom.

Price punches through support at 54.75 and 2 days later pulls back to the rectangle, stair-stepping its way upward to point A. There, price closes above the top rectangle trendline.

Because the downward breakout sees price drop just 3%, I consider the rectangle to be a failure. When price closes above the top of the chart pattern, it busts the downward breakout, too.

Let's talk about both the breakout and bust.

Chart patterns that see price move in the breakout direction by no more than 5% are what I call 5% failures. Although this rectangle ultimately moves lower after peak A, it does so only after closing above the top of the rectangle. If you sold this rectangle short after the downward breakout expecting a price decline, you might have been stopped out for a loss. Certainly, your worry would have climbed along with price.

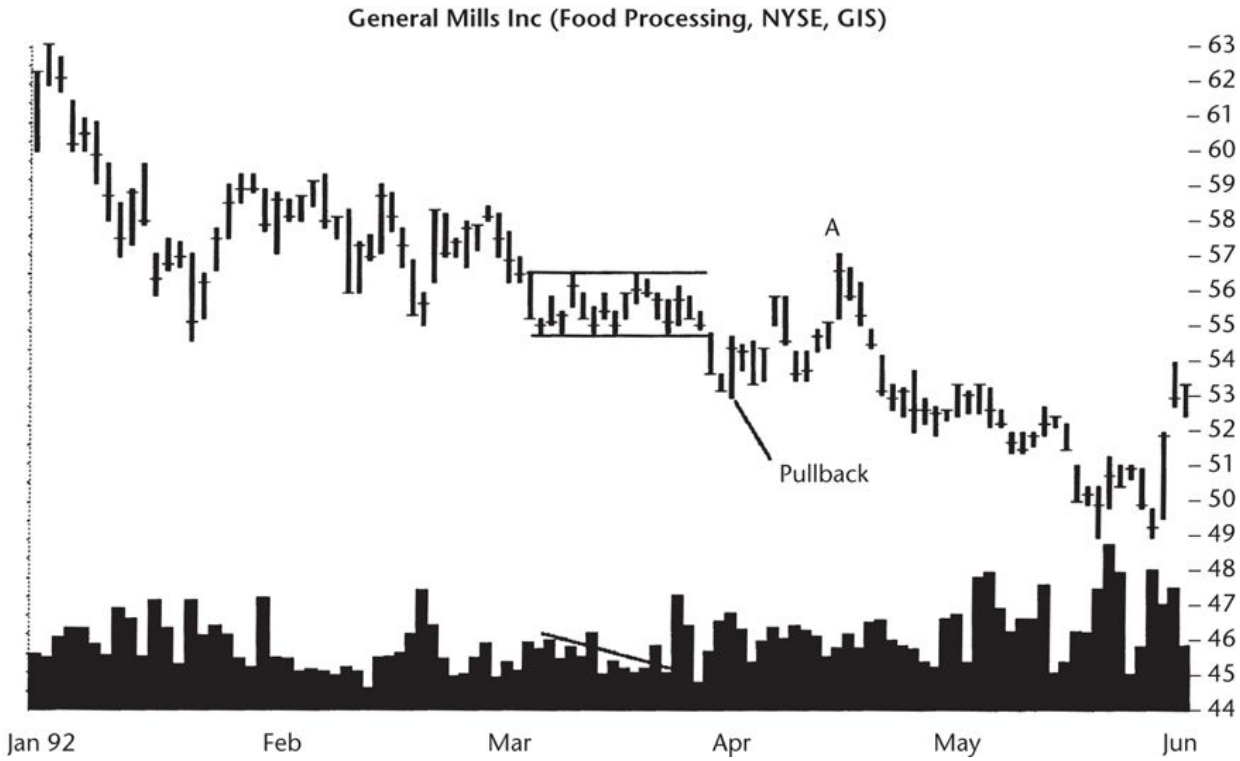


Figure 51.3 This is a rectangle bottom failure in a downward price trend. Price breaks out downward and drops less than 5% before closing above the formation top.

If price moves in the breakout direction no more than 10% (after the breakout) and reverses to close outside the other rectangle boundary (in this case, that means a close above the pattern's top), then it busts the breakout. Busts happen to almost half of rectangles (see Table 51.9).

What stops price from declining after a rectangle breakout is the same as what stops it for other chart patterns. When buying demand exceeds selling pressure, price rises. If this imbalance is strong enough, a trend change occurs (price rises more than 20% after a downward breakout).

I can think of many reasons to explain why buying demand surges: Improving fundamentals, traders seeing price hitting underlying support, bottom fishing among novice traders, insider buying, even rumors (takeover, expected good quarterly earnings, good future outlook) can propel a stock higher, sometimes substantially.

Let's look at the statistics to better define average behavior.

Statistics

Table 51.2 shows general statistics for rectangle bottoms.

Table 51.2 General Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	535	367	160
Reversal (R), continuation (C) occurrence	100% R	100% C	100% C
Average rise or decline	48%	–16%	–26%
Standard & Poor's 500 change	11%	–2%	–11%
Days to ultimate high or low	202	40	32
How many change trend?	56%	28%	57%

Number found. I catalogued 1,181 rectangle bottoms in 638 stocks with the first found in July 1991 and the most recent in December 2019. That span covered multiple bull and bear markets. I did not include bear markets with upward breakouts, so that's why the total in the table is smaller than 1,181.

Reversal (R), continuation (C) occurrence. Because rectangle bottoms must have price entering the pattern from the top, an upward breakout represents a reversal of the price trend and a downward breakout is a continuation.

Average rise or decline. The best performance from rectangles comes in bull markets after upward breakouts. In fact, when the breakout is in the same direction as the general market trend, the pattern performs better.

For example, rectangles in bear markets with downward breakouts show declines averaging 26% (trading with the trend), but those in

bull markets decline an average of just 16% (a countertrend trade). This behavior shows the market's influence, and it reinforces the belief that you should trade with the general market trend.

Standard & Poor's 500 change. Compare the size of the market's move with the average rise or decline from rectangles. Notice how the general market supports the rectangle's move. A large drop in the S&P associates with a large drop from the rectangle. A large up move in the market translates into a large upward move from the rectangle. Countertrend moves are smaller. This bears repeating: Trade with the market trend. Add the industry trend to the mix, and if all trends agree (market, industry, and stock), then you'll increase your chance of having a winning trade.

Days to ultimate high or low. The following is a calculation I consider fun to do. Notice that the drop in bull markets sees price decline an average of 16% and takes 40 days. In bear markets, the drop measures 26% and takes 32 days. If you do the math, you'll find that price in bear markets drops twice as fast as it does in bull markets.

How many change trend? This is a count of how many rectangles see price move more than 20% after the breakout. For upward breakouts, I like to see values over 50%. For downward breakouts, I don't have any guidelines, but the big total in bear markets is one reason why this pattern has a performance rank of 2.

Table 51.3 shows failure rates. For small moves, rectangles in bear markets (downward breakout) do best, with just 6% failing to drop more than 5%. When the maximum limit reaches 25%, rectangles in bull markets with upward breakouts have lower failure rates.

Notice how quickly the failure rates climb. In bear markets, a count of rectangles failing to drop no more than 10% after the breakout sees the failure rate more than triple (to 19%) the breakeven rate.

Also, notice that the lowest failure rates accompany breakout directions that are in line with the general market trend—bull market, upward breakouts and bear market, downward breakouts. The countertrend rectangles (bull/down) have higher failure rates.

Here is another way to use the table. Suppose you have a rectangle with a breakout price of 10 and it is 2.50 tall. The measure rule

(discussed later in the chapter) suggests a drop to 7.50 after a downward breakout. That is a 25% drop. How likely is that in a bear market? Answer: 58% will fail to see price drop that far. If it happens in bull markets, the failure rate reaches 80%.

Table 51.4 shows breakout-related statistics.

Breakout direction. The breakout direction for the three columns hovers around random (50%). As I mentioned, the breakout direction favors the market trend: upward in bull markets and downward in bear markets.

Yearly position, performance. Mapping performance over the yearly price range says that the best performance comes from rectangles near (within a third of) the yearly low.

Table 51.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	81 or 15%	89 or 24%	10 or 6%
10	67 or 28%	77 or 45%	20 or 19%
15	42 or 36%	58 or 61%	21 or 32%
20	44 or 44%	39 or 72%	18 or 43%
25	28 or 49%	30 or 80%	24 or 58%
30	31 or 55%	23 or 86%	14 or 67%
35	22 or 59%	14 or 90%	10 or 73%
50	61 or 70%	24 or 96%	29 or 91%
75	59 or 81%	13 or 100%	14 or 100%
Over 75	100 or 100%	0 or 100%	0 or 100%

Table 51.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	59% up	41% down	57% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 51%, M 44%, H 49%	L –18%, M –12%, H –10%	L –27%, M –20%, H –25%*
Throwbacks/pullbacks occurrence	64%	66%	64%
Average time to throwback/pullback peaks	7% in 6 days	–7% in 6 days	–11% in 6 days
Average time to throwback/pullback ends	12 days	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	43%	–15%	–21%
Average rise/decline for patterns without throwbacks/pullbacks	56%	–18%	–33%
Percentage price resumes trend	71%	48%	46%
Performance with breakout day gap	46%	–19%	–25%
Performance without breakout day gap	48%	–15%	–26%
Average gap size	$0.39	$0.46	$0.32

* Fewer than 30 samples.

Throwbacks and pullbacks. When you trade against the prevailing market trend, a pullback is more likely (66%) to occur. With the market trend, throwbacks or pullbacks occur 64% of the time.

Price moves in the breakout direction an average of 6 days before reversing and completing the round-trip back to the breakout in 12 days.

In all columns, when a throwback or pullback occurs, performance suffers. In bear markets, it's especially violent. Price drops 33% if no pullback appears but averages a drop of 21% if the stock pulls back. The reason for this, I think, is that momentum suffers when a pullback (in this case) or a throwback occurs.

After a pullback or throwback completes, price tends to *rise*. Keep that in mind when you see a throwback or pullback. In well-behaved chart patterns, after a pullback completes, you would see price resume dropping, but for rectangle bottoms, that happens less than half the time (48%, 46%) as the table shows.

Gaps. Rectangles have few breakout day gaps (191 out of 1,062 patterns). The results are mixed as to whether gaps help or hurt performance.

Table 51.5 shows pattern size statistics.

Height. Tall rectangles perform better than short ones across all columns in the table. For example, tall rectangles in bull markets with upward breakouts see price rise 56% after the breakout. Rectangles shorter than the median show price rise an average of just 39%.

To use this finding, measure the height of the rectangle from top trendline to the bottom one. Divide by the breakout price (for upward breakouts, use the price of the top trendline. For downward breakouts, use the price of the bottom trendline). If the result is larger than the median shown in the table, then you have a tall pattern.

Width. Usually, wide patterns perform better than narrow ones, and that's true in two of three columns. The exception is in bear markets, and the numbers are close. Perhaps additional samples would push them into alignment.

Table 51.5 Size Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	56%	–18%	–26%
Short pattern performance	39%	–13%	–25%
Median height as a percentage of breakout price	8.3%	9.6%	13.0%
Narrow pattern performance	42%	–15%	–26%
Wide pattern performance	54%	–17%	–25%
Median width	55 days	55 days	50 days
Short and narrow performance	37%	–14%	–25%
Short and wide performance	44%	–12%	–23%
Tall and wide performance	57%	–19%	–25%
Tall and narrow performance	54%	–17%	–28%

Height and width combinations. Looking at the combination of height and width, you would expect patterns both tall and wide to perform best because those traits do well individually. The table shows that is indeed the case. Tall and narrow works best in bear markets, which agrees with their individual traits, too (meaning tall patterns outperform and narrow patterns outperform so the combination of tall *and* narrow outperforms).

You might think these results would be obvious, but sometimes the individual traits don't lead to better performance when you combine them. You see that type of behavior in other chart patterns.

Table 51.6 shows volume-related statistics.

Volume trend. Volume trends downward in more than two of every three rectangles. Does it matter if volume trends upward instead? In many chart pattern types, the answer is “not really.” They may show a preference, but the statistical performance difference is minor.

Rising/Falling volume. In bull markets after upward breakouts, rectangles with a rising volume trend *substantially* outperform those with a falling volume. Downward breakouts are mixed, and the performance difference isn't great, either.

Breakout day volume. Here again, bull markets with upward breakouts see substantially better performance if breakout day volume is light (below average). To those who warn of taking a position in a chart pattern showing low breakout volume, I say prove it. Yes, heavy breakout volume usually helps, but not all of the time and the push isn't as large as many suggest.

Table 51.7 shows how often price reaches a stop location. I split the rectangle and measured how often the search for the ultimate high or low resulted in price touching one of the three locations shown in the table.

For upward breakouts in bull markets, as an example, price returned to the top of the pattern 72% of the time. If you had placed a stop there, it would have closed out your trade in almost three of every four trades.

Table 51.6 Volume Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	71% down	74% down	69% down
Rising volume trend performance	59%	–17%	–25%
Falling volume trend performance	43%	–15%	–26%
Heavy breakout volume performance	46%	–16%	–25%
Light breakout volume performance	51%	–16%	–26%

Table 51.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	72%	3%	1%
Middle	21%	13%	16%
Pattern bottom	4%	65%	63%

Table 51.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	48%	–15%
2000s	52%	–14%
2010s	41%	–18%
Performance (above), Failures (below)		
1990s	12%	20%
2000s	12%	31%
2010s	22%	20%

Place a stop below the bottom of the pattern and it would trigger just 4% of the time on average.

Before you select one of the locations (or any other location, for that matter) consider the size of the loss. Change the potential loss into a percentage of the current price and see if you can tolerate such a loss. Adjust your stop location accordingly. You may consider using a volatility stop (see the Glossary) so you don't get stopped out on normal price movement.

Also note that after price reaches the ultimate high or low, it'll reverse. I stopped checking if it then returned to the chart pattern. So if you intend to hold a position longer, such as in a buy-and-hold situation, then the stop-out rate might be higher than that shown in the table.

Table 51.8 shows the performance over three decades.

Performance over time. The 2010s showed the worst performance for upward breakouts and the best for downward ones. Upward breakouts showed the best performance in the 2000s and the worst performance after downward breakouts. I think all of this makes intuitive sense. Please note that bear markets only happened in the 2000s and are not included in the results.

Failures over time. The bottom portion of the table is more confusing. The 2010s showed a big spike in failures for rectangles with upward breakouts. Downward breakouts did poorly in the 2000s.

Table 51.9 shows busted pattern performance.

Table 51.9 Busted Patterns

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	137 or 26%	157 or 43%	25 or 16%
Single bust count	67 or 49%	104 or 66%	13 or 52%
Double bust count	38 or 28%	2 or 1%	3 or 12%
Triple+ bust count	32 or 23%	51 or 32%	9 or 36%
Performance for all busted patterns	–16%	46%	18%
Single busted performance	–27%	68%	30%
Non-busted performance	–16%	48%	33%

Busted patterns count. I made mention of this earlier, but notice how downward breakouts in bull markets busted almost half the time (43%). Bear markets with downward breakouts bust the fewest number of times.

The 26% bust rate after upward breakouts in bull markets surprises me. Those trades usually sees price soar, so it has me puzzled that over a quarter of the time, price reverses quickly and closes below the bottom of the pattern so often.

Busted occurrence. When a pattern busts, it busts single, double, or more than twice (triple+). Notice that downward breakouts tend to see triple+ busts happen more often than double busts. I've seen this in other chart patterns, so it's not unique, but it is unusual and even disconcerting. It's nothing to lose sleep over.

Busted and non-busted performance. Non-busted patterns perform slightly better for downward breakouts but tie for upward breakouts.

If you can determine when price will single bust (only), that situation will lead to better performance than a non-busted pattern except in bear markets where non-busted patterns outperform.

To trade a busted pattern, I suggest you stick to bull markets with downward breakouts. The rise after the pattern busts is high enough to consider trading. The numbers are averages, so keep that in mind.

To put it another way, if you see a rectangle bottom in a bull market with a downward breakout, there's a 43% chance price won't drop more than 10% (meaning it'll bust the pattern). So not only will the drop be small, but it could lead to a big advance. That's potentially bad news if you short a stock.

Trading Tactics

Table 51.10 shows trading tactics.

Table 51.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the rectangle by subtracting the value of the trendlines from each other. For upward breakouts, add the height to the top trendline; for downward breakouts, subtract the value from the bottom trendline. The bottom portion of the table shows how often this method works.
Wait for breakout	Since you cannot be sure in which direction a rectangle will break out, wait for price to *close* outside the trendline border before trading in the direction of the breakout. Consider avoiding shorting after a downward breakout in bull markets (those bust 43% of the time).
Tall rectangle scalp	If the rectangle is tall enough, sell or sell short near the top trendline and buy or cover near the bottom trendline.
Throwbacks, pullbacks	If you have a downward breakout, watch for a pullback and short the stock or add to your short position once price begins descending again. Use the same technique for an upward breakout: Wait for the throwback, then initiate or add to your position when price rises.
Other	Watch for rectangles forming as the corrective phase of a measured move formation and adjust the target price accordingly.
Stop location	See Table 51.7 for stop location guidance.
Busted trade	Single busted rectangles in bull markets after downward breakouts do especially well.

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	90%	79%	88%

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching full height target	79%	55%	69%
Percentage reaching 2× height	60%	28%	39%
Percentage reaching 3× height	49%	16%	25%

Measure rule, targets. The first tactic is to determine the predicted price target using the measure rule. The rule first finds the height of the rectangle by subtracting the lowest low from the highest high. In essence, just subtract the value of the two trendlines from each other.

Let's use Figure 51.5 as an example of this. The top trendline is at 12.44, and the bottom one is at 11. The difference, 1.44, is the formation height. Add the height to the value of the top trendline to get the upward breakout target (13.88) and subtract it from the value of the lower trendline to get the downward breakout target (9.56).

The bottom portion of the table shows how often this method works. For example, the figure shows the rectangle in a bull market with an upward breakout. Using the full height (which we did), price will reach the target 79% of the time, on average. Cut the height in half and add it to the top trendline for a closer target that will see price reach it 90% of the time.

Once you have selected your target, compute the distance from the nearest rectangle trendline to the target and divide by the current price. Compare the result to the values listed in Table 51.3.

For example, if the distance is $5 and the breakout price (the current price) is $50, that's a 10% move. For upward breakouts in bull markets, Table 51.3 says that 28% will fail to see price rise more than 10%. That sounds reasonable for a target location.

Wait for breakout. Since you cannot predict the breakout direction with complete accuracy (price tends to break out upward in bull markets and downward in bear markets), wait for the breakout before investing. Place the trade after price *closes* outside the rectangle trendline, and then trade with the trend. Using the closing price helps avoid false breakouts, but it also means you'll be initiating a trade late.

If you're a swing trader, I'd place a buy order a penny above the top trendline (or a penny below the bottom trendline). You may suffer a premature breakout, but you'll be into the trade in a more timely manner, and probably at a better price than waiting for the opening price a day after a breakout.

Tall rectangle scalp. If the rectangle is tall enough, consider placing an intraformation trade near the two trendlines. Short at the top when price begins descending, and cover when it nears the bottom trendline. At the bottom, buy long and sell when price nears the top trendline. Keep in mind that price might break out downward or upward, respectively.

Only try this type of trading if you're an experienced swing trader and only if the rectangle is tall enough (perhaps in one direction only, like upward in bull markets and hope for an upward breakout, so you'd hold on longer at the top trendline).

Throwbacks, pullbacks. Throwbacks and pullbacks allow investors or traders another opportunity enter a new position, add to an existing position, or get out with a smaller loss. Consider taking advantage of it, but wait for price to complete the throwback or pullback before placing a trade. The reason for waiting is that price may continue in the adverse direction.

Other. Sometimes, rectangle bottoms form as the corrective phase of a measured move chart pattern. See Chapter 46, Measured Move Down, for information on how to take advantage of the situation.

Stop location. Table 51.7 discusses where to place a stop-loss order. Don't forget to change the potential loss into a percentage of the current price to see if you can tolerate such a loss.

Busted trade. See Table 51.9 when considering trading a busted pattern. Busted downward breakouts in bull markets work especially

well if the rectangle single busts. And single busts happen two-thirds of the time. Hint. Hint.

Table 51.11 Special Features

Description	Bull Market	Bear Market
Partial rise, success	75%	80%
Partial decline, success	77%	60%

Table 51.11 shows special features of the rectangle. If you are not familiar with a partial rise or decline, consult the book's Glossary.

Partial rises and declines are reliable predictors of breakout direction. For example, an upward breakout follows a partial decline 77% of the time (bull market). A downward breakout follows a partial rise 75% of the time. As good as those numbers are, trading with them isn't as easy as it sounds. Try using a trading simulator to test your skills before using real money.

Experience

Puget Sound Energy (PSD) in 2006 formed a tall and long rectangle, which I show in **Figure 51.4** at A.

A trendline drawn along the peaks touched the line several times and another trendline drawn along the bottoms also touched that line multiple times. Price crosses the pattern from top to bottom, filling the whitespace with price movement. That's how a rectangle bottom is supposed to appear. At B, a partial decline correctly predicts an upward breakout, but I didn't use that as an early entry signal. Rather, I waited for the day after the breakout before buying.

Here's some information from my notebook: “Stop, % loss: 19.97, –9%. I want to keep this wide just in case it throws back [it did not throw back]. This is intended to be a longer term holding. Volatility stop: $20.97, –4.0%. Minor low stop: 20.76, – 5.0% on 23 June 2006.”

I'm not sure which stop I used, but what surprises me is that I used one at all. Usually I don't use a stop on a long-term holding.

The utility average was trending high, which is what I like to see from the market (for this electric utility). Upside target was 23.70, a big W target on 3 October 2005. I show the big W as the left side at G, bottom at H and I, but the pattern didn't perform as expected (no tall right side). However, the stock did pause on its way higher at J, where it moved sideways for a few weeks, mirroring the peak at G.

My scoring system says this was a –2 with a 27.52 target. The –2 means it's less favorable than usual that the stock will climb that far. See my book, *Trading Classic Chart Patterns* (Wiley, 2002).

I bought on 13 July 2006 (C) and received a fill at 21.86. Then I waited to collect my dividend checks as the price climbed.

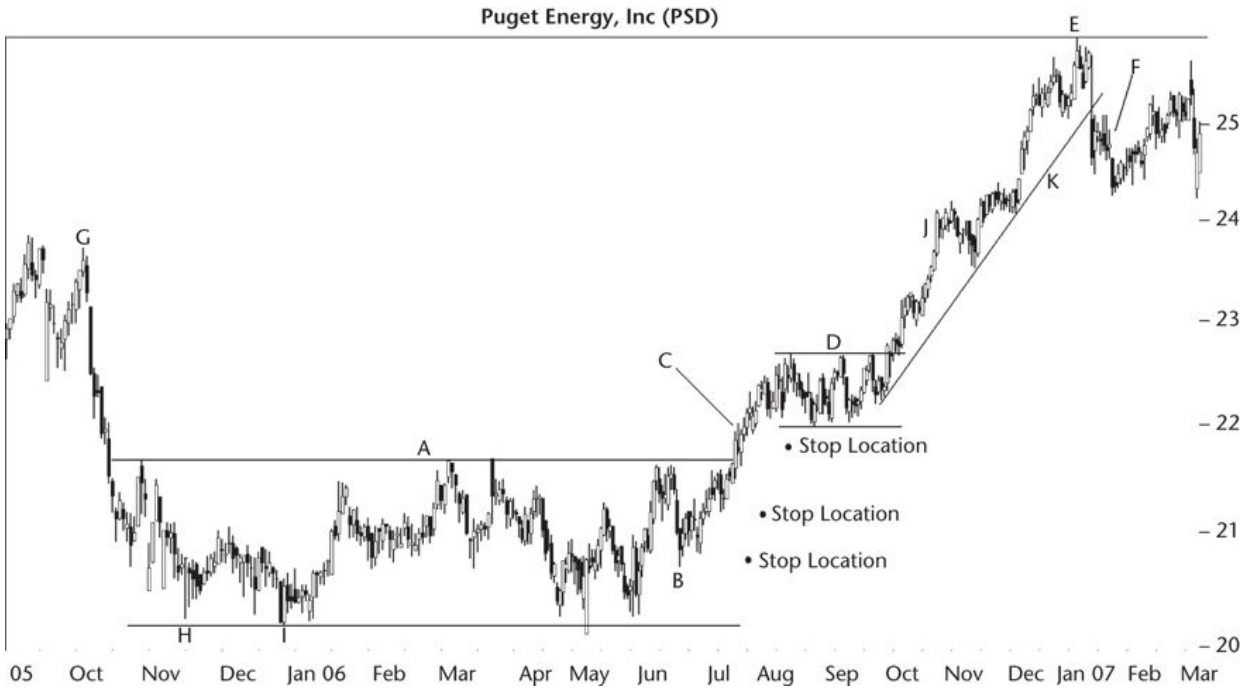


Figure 51.4 A trade in this rectangle resulted in a profit.

Four days after I bought, I raised the stop to 20.76, just below the minor low on 23 June. See the lowest black dot on the chart. It shows the approximate price and time when I moved my stop. Nine days later I raised it again, to 21.13, "below a minor low. Earnings are due out 4 August, so I want to keep the stop a bit wide in case of an adverse report." The chart shows the new location (the middle black dot).

On 7 August, I raised the stop for the last time, to 21.71, shown as the highest black dot. About a month later, "6 September 2006. I canceled the stop because I wanted to hold it longer term and I feel I might be stopped out."

The stock formed a rectangle top at D. At E, the stock peaked and started moving down.

At F, 16 January 2007, I wrote this in my notebook: "Sell reason: The utility average is heading lower. The utility stocks I own are all showing weakness and also the ones I follow. I hate to sell, but it's the wise course. Other stocks will do better this year than utilities in the short-term anyway. This is completing a pullback to the trendline, and it'll soon continue down." I made 16% on the trade, including dividends.

I'm not sure to what trendline I'm referring, but I show a likely candidate at K. The stock *did* continue lower but only the next day. From there, it built a broadening top pattern (not shown) and eventually found the ultimate high at 28.60 before the 2007–2009 bear market pulled the rug from under the stock. It bottomed at 19.03 in 28 October 2008.

- Lesson: If you want current income, utility stocks provide a good way to participate in both income and capital gains. Income-producing stocks offer some downside protection in bear markets.
- Lesson: Utility stocks can be slow movers. Other stocks won't pay big dividends, but the capital appreciation could be higher.
- Lesson: Try for a balanced portfolio of income-producing stocks and those better suited for large capital gains.

Sample Trade

Figure 51.5 shows a paper trade I made. The rectangle bottom appeared after price dropped from a high of 20.63 in October 1997 (not shown). The drop was a painful one, but it did not occur all at once. Price dropped quite rapidly to 15 where it moved horizontally for 8 months. Then the second half of the decline took over, and price reached a low of about 11.

Price bounced off the low several times like a boy taking his first steps on a trampoline. They were tentative, shaky, with not much enthusiasm. Then in mid-October 1998, price touched the bottom trendline and moved quickly across the rectangle to tie the September high at 12.38. A few more oscillations and the two trendline boundaries became apparent.

If you look at the overall picture, you might think that price would continue down—a downward breakout (following the downward inbound trend). I could not tell which direction price would go, so I decided to wait for the breakout. If the formation acted as a consolidation, then the breakout would be downward. However, with a two-step downtrend from the high at 20.63, this reminded me of a measured move down with a long corrective phase. I thought it might break out upward. If the rectangle were taller, I would try an intraformation trade (buy at 11.13, sell at 12.38, and then reverse).

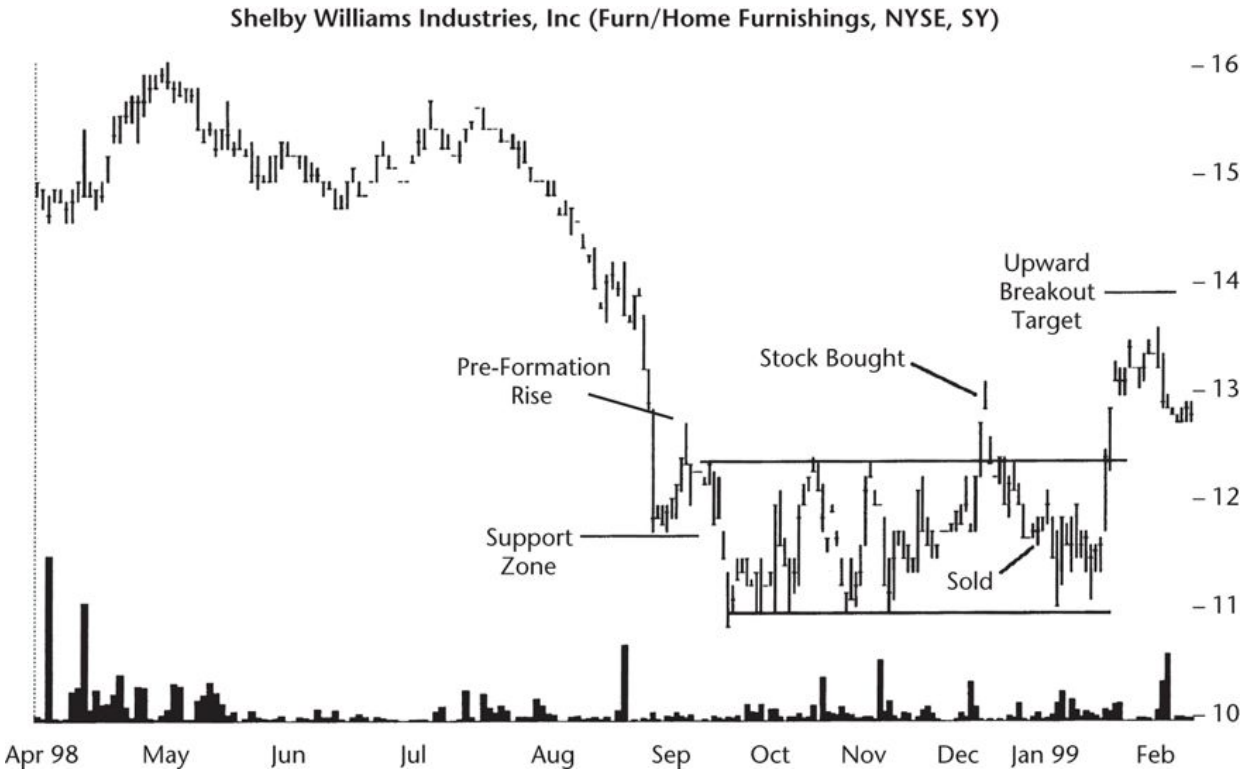


Figure 51.5 Rectangle bottom followed by upward breakout. The measure rule applied to this rectangle bottom computes the formation height as the difference between the trendlines. Adding the difference to the value of the top trendline gives an upward breakout target of 13.88.

In early December, price pierced the top trendline and closed above it, staging an upward breakout. I noticed the breakout the day after it happened and bought the stock at 13, midrange for the day.

I estimated that a support zone had formed at 11.75, so I placed a stop at 11.63. Price had stopped at this level just before the chart pattern formed and again just before the December breakout. A better stop would have been just below the lower rectangle trendline because both trendlines act as support or resistance zones. However, I did not want to take such a large loss (15%+).

A day after buying the stock, price returned to the rectangle formation to do more work. Price slowly, agonizingly, moved lower until hitting my stop in late December. I took a paper loss of 11%. After a second upward breakout, price continued rounding over, then dropped, and finally hit bottom at 8.88 in March 1999 before recovering to 16 and change.

52
Rectangle Tops

RESULTS SNAPSHOT

Appearance: Price trends up to the rectangle and then oscillates between two horizontal trendlines before breaking out.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Short-term bullish continuation
Performance rank	4 out of 39	16 out of 20
Breakeven failure rate	15%	15%
Average rise	51%	24%
Volume trend	Downward	Downward
Throwbacks	66%	70%
Percentage meeting price target	78%	60%
See also	Flags, measured move up, rectangle bottoms	

Downward Breakouts

	Bull Market
Reversal or continuation	Short-term bearish reversal
Performance rank	32 out of 36
Breakeven failure rate	34%
Average drop	13%
Volume trend	Downward
Pullbacks	64%
Percentage meeting price target	54%

If you think of a rectangle as a horizontal consolidation region or a flat base that price uses as a springboard to a strong move, then rectangles are easier to identify and the statistics more meaningful.

Rectangle tops are solid performers in bull markets with upward breakouts as the Results Snapshot shows. They rank fourth for performance out of 39 pattern types, where 1 is best.

The other two entries, bear markets with upward breakouts and bull markets with downward breakouts, have bad and awful performance, respectively.

The breakeven failure rate in bear markets ranks 12 out of 20 (not shown, where 1 is best). That's the best (fewest failures) of the bunch. And you'll notice that only upward breakouts appear for the bear market. That's because downward breakouts are too rare to include in the chapter.

What does a rectangle top look like? Let me dig up some family photos to show you.

Tour

Figure 52.1 shows an example of a rectangle top. Price begins its upward trek in June 1992 at 14 (not shown) and reaches the rectangle in May of the following year. The stock consolidates for over a month, bouncing between overhead resistance at 24.63 and underlying support at 23.63. A trendline drawn across the minor highs is horizontal as is another trendline connecting the minor lows. There are a number of touches of both trendlines, suggesting a reliable chart pattern.

The volume pattern begins in the typical manner—receding. However, about two-thirds of the way to the breakout, the pattern changes. Volume gets heavier as if building pressure for an upcoming release. Then, mysteriously, volume subsides when price moves horizontally just below the top trendline for over a week (in June). When price pierces the top trendline, volume picks up but not remarkably so. Volume just builds on the expanding trend that is developing since price began sliding along the trendline top.

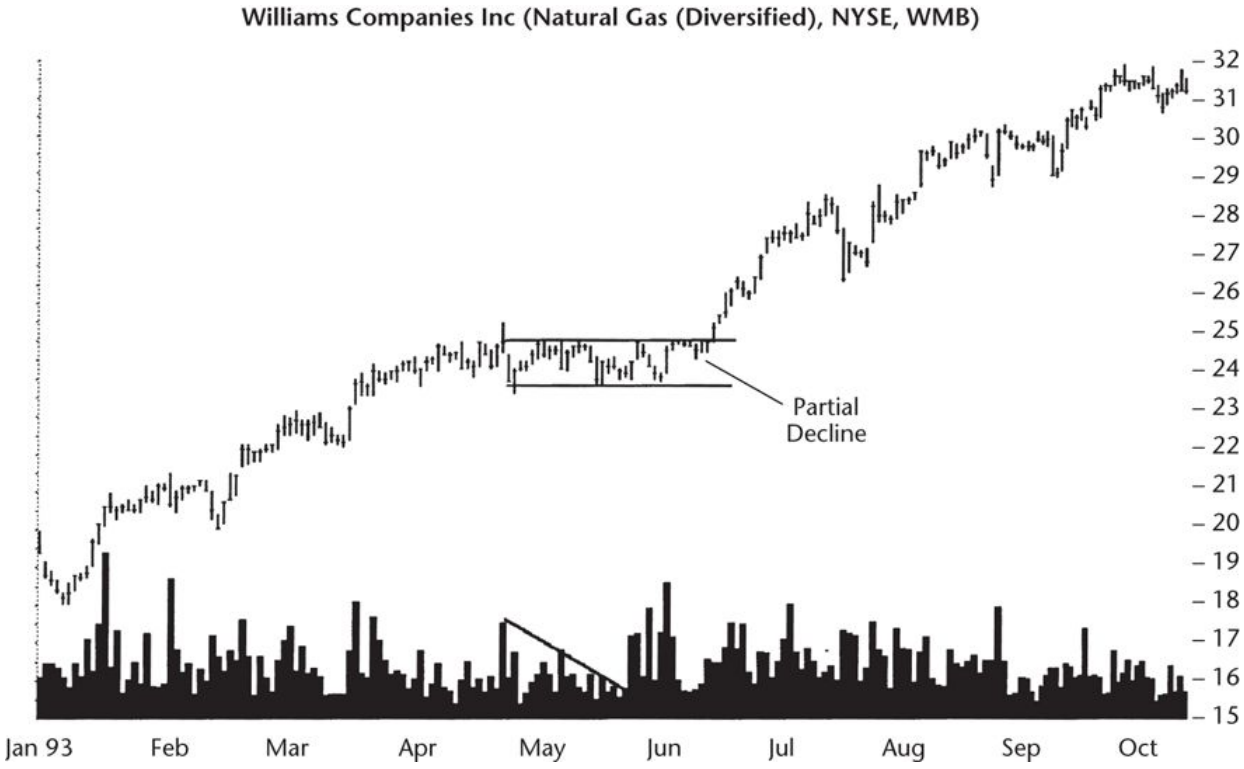


Figure 52.1 Rectangle top with an upward breakout performs well in this uptrend.

Price climbs away from the rectangle in this example. There is a slight, 3-day dip in late June when it looks as if price is trying to throw back to the formation top, but buying demand is just too strong. Price changes its mind and turns around to continue up.

Why do rectangles form? A rectangle chart pattern is a struggle between the haves and the have-nots. Those who own the stock but want to sell have identified a price at which they are willing to part with their shares. When the price reaches that level, they sell, forcing the stock down. When price falls, they quit dumping the stock.

On the other side is another group of investors who want to grab the stock. They place buy orders at what they perceive to be a good value. When price falls to their target, the buy orders overwhelm supply and price rises. If this up–down struggle goes on long enough, price bounces between one extreme and the other.

Over time, you can draw a horizontal trendline along the peaks and another along the valleys as a rectangle pattern takes shape. Eventually, one of the sides runs out of ammunition. If the people selling their shares run out first, buying demand overwhelms supply and price pierces the top trendline.

If the buyers spend all of their money and back away from the table, price drops through the bottom of the rectangle. In either case, the shares continue in the breakout direction because of growing demand (the price moves upward) or increasing supply (the price tumbles).

Identification Guidelines

Table 52.1 shows identification guidelines for rectangle tops.

Appearance. Price rises and bumps up against overhead resistance, stopping the climb. At the bottom of the pattern, the stock bounces off a floor of support. Between the two layers, price oscillates up and down, but moves horizontally, eventually pushing through the wall of support or resistance and breaking out.

Price trend. Over the short term, price should trend upward to the rectangle. This upward trend is what distinguishes the pattern from rectangle bottoms. The distinction is arbitrary; I wanted to see if there is any difference in the way the two chart patterns perform.

Horizontal trendlines. As the rectangle forms, price rises to a resistance level and falls back to a support area for another try. If this pattern continues, the minor highs can be joined with a trendline drawn along the top of the rectangle and another trendline can be drawn below the minor lows. The two trendlines should be horizontal or nearly so. If there is a slight tilt to the trendline, do not worry as long as it does not disturb the overall appearance of a congestion region.

Touches. To qualify as a rectangle, price must touch the trendlines at least five times. That's three touches of one trendline and two of the other. The touches need not alternate from one trendline to the other, but the minor highs and lows must be distinct. Price must also cross the pattern from top to bottom plenty of times to erase the whitespace. Avoid connecting two peaks and two valleys and calling it a rectangle.

Table 52.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price moves horizontally for weeks or months, bouncing between a layer of support and a ceiling of resistance until eventually breaking out.
Price trend	The short-term price trend leading to the rectangle top should be up.
Horizontal trendlines	Two horizontal (or nearly so) trendlines outline the price action, one above the minor highs and one below the minor lows.
Touches	There should be at least five touches of the trendlines (three on one side and two on the other). Price must cross the pattern enough to cover the whitespace.
Volume	Volume usually recedes until the breakout.
Breakout direction	Can be any direction. A breakout occurs when price closes outside one of the trendline boundaries.
Duration	Usually longer than 3 weeks to distinguish it from a flag. If shorter than 3 weeks, the rectangle top should *not* be preceded by a flagpole.

Volume. The volume trend varies from rectangle to rectangle but usually recedes. Many of the charts accompanying this chapter show such a trend.

Breakout direction. Price can break out in any direction it feels like, but favors upward. That's true for both bull and bear markets.

Duration. Flags can masquerade as short rectangles, so I place a limit on their length of 3 weeks. Patterns longer than that are rectangles. Patterns shorter than that can also be rectangles, providing there is no flagpole attached to the pattern. A flagpole is a straight-line run up or down followed by the flag. Without a flagpole, you don't have a flag. You have a rectangle.

Figure 52.2 shows what a rectangle top looks like. Price trends upward leading to the rectangle. Then the stock bounces between support at 54 and overhead resistance at 59.50. The wide, tall

rectangle has plenty of trendline touches. If you are lucky, you might be able to get two or three trades from this pattern (as marked by the numbers on the figure). Each top-to-bottom pass represents a price change of about $5, plenty of profit opportunity to be of interest to experienced swing traders.

The volume pattern trends downward over the length of the chart pattern. Near the end of the pattern, volume spurts upward, propelling price higher until the stock breaks out and zooms to new a high. Statistics suggest that the majority of rectangles have receding volume trends. I would not exclude a rectangle top simply because it has a rising volume trend. If you see a tattoo, though, then that's another story. I don't like tattoos.

Figure 52.2 A rectangle top with a receding volume trend. Although most rectangles exhibit receding volume, do not automatically exclude those with rising volume. Three profitable trading opportunities are marked where price crosses from one side of the rectangle to the other.

Focus on Failures

Of the nearly 1,700 rectangles I reviewed, about 20% fail. **Figure 52.3** shows an example of a failure.

The rectangle shows an upward price trend climbing into the pattern even if you ignore the undershoot of about 2 weeks before the start of the rectangle. The stock moves sideways, bumping up against overhead resistance in two minor high touches and underlying support with three minor low touches.

Two trendlines connecting peaks and valleys show a horizontal price trend. The rectangle is a valid chart pattern in this example.

Price breaks out of the rectangle at 35.63 and reaches a new high of 37. However, it stalls in mid-April before turning around and throwing back to the top trendline. Once price settles on a new direction, it heads down at a good clip. The brief climb represents a 4% price rise above the top trendline. I consider anything less than 5% in the breakout direction to be a failure. The failure confirms when price closes beyond the side opposite the breakout (below the bottom in this case). When that happens, it busts the upward breakout.

I highlight 5% failures because I wanted a method to catalog poorly performing chart patterns. Look at this another way: Had you bought this stock when it left the rectangle top, would you be upset when it throws back to the top trendline and continues lower? You might even take a loss if you are not quick enough to exit the trade.

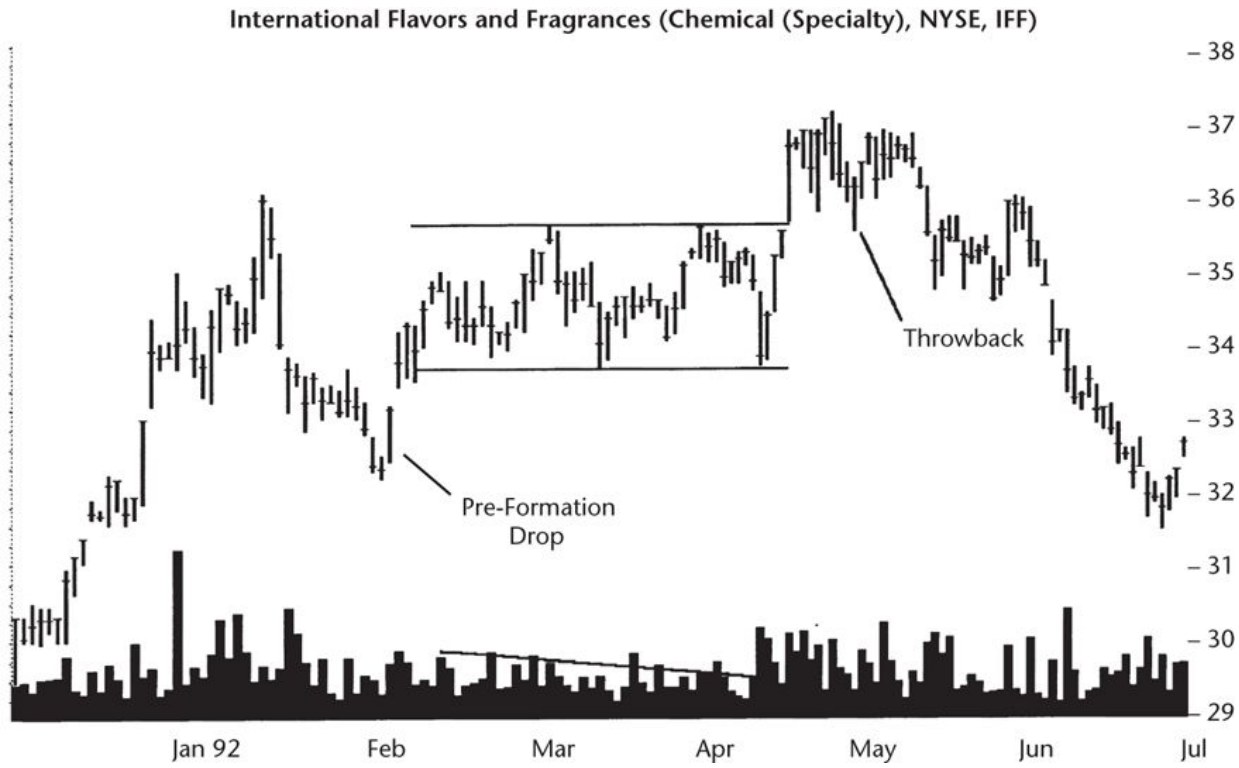


Figure 52.3 A 5% failure of a rectangle top. Price follows the existing trend upward but only for a little gain before heading back into the rectangle and shooting out the other side.

Several of my trades follow the profile shown in the figure: an upward breakout followed by a reversal. After that reversal, price continues down as if it forgot that a throwback is supposed to see price recover once it completes.

Statistics

Table 52.2 shows general statistics.

Number found. I found 1,804 rectangle tops in 732 stocks with the first pattern located in July 1991 and the most recent in December 2019. Not all stocks covered the entire period, and some no longer trade. I removed 122 bear market patterns because they didn't meet the 150-pattern minimum for this edition.

Reversal (R), continuation (C) occurrence. Since we are dealing with tops, upward breakouts from rectangles act as continuations of the uptrend while downward breakouts are reversals by definition.

Average rise or decline. Rectangle tops in bull markets with upward breakouts put in a stellar performance: Price rises an average of 51%. It's why the pattern has a performance rank of five. The other two columns, from left to right, have mediocre and yucky performance, respectively.

Standard & Poor's 500 change. The general market helped upward breakouts in bull markets (a rising tide lifts all boats). The other two columns don't show numbers high enough to assist much with pattern performance. All of this is speculation, of course, but I do know that the general market helps stock performance.

Days to ultimate high or low. I compared the velocity of upward breakouts in bull and bear markets and found that the bear market rise was 1.4 times the rate of the bull market climb. Doesn't that just curl your toes with delight?

Table 52.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Number found	945	171	566
Reversal (R), continuation (C) occurrence	100% C	100% C	100% R
Average rise or decline	51%	24%	–13%
Standard & Poor's 500 change	12%	–1%	–2%
Days to ultimate high or low	227	79	43
How many change trend?	59%	42%	21%

How many change trend? This item is a measure of how many rectangle tops see price rise more than 20% after a breakout. For bullish patterns, I consider values over 50% to be top notch. I don't have a benchmark for downward breakouts, though. However, the statistics say that the two right columns fall short of the averages for other chart pattern types.

Table 52.3 shows failure rates for rectangle tops as a frequency distribution of gains or losses. For example, 15% of rectangles with upward breakouts in bull markets fail to see price climb more than 5%. A third (35%) will fail to see price rise more than 15%. Half will top out after rising less than 30%.

The other two columns show even worse performance.

How useful is the list? If you use the measure rule to get the potential gain, then this table becomes quite useful. Suppose you have a stock you wish to buy and the measure rule says the target is 20% away from the current price. How likely will it be to make money trading a rectangle top with an upward breakout? Answer: 41% of rectangles in bull markets will fail and 58% of them in bear markets will also fail on average.

Table 52.4 shows breakout-related statistics.

Breakout direction. I checked how often price broke out upward or downward from rectangles and they are shown in the table. Rectangle tops prefer to break out upward, even in bear markets (which should be a surprise).

Yearly position, performance. Where do the best performing rectangle tops reside? Those within a third of the yearly low perform better than the other two thirds. Consult the table for the range you should avoid trading; it varies depending on market conditions and breakout directions.

Throwbacks and pullbacks. Throwbacks and pullbacks occur about two-thirds of the time, and it takes price an average of 6 days before the price trend reverses and heads back to the breakout. In 11 or 12 days, total, the stock completes the round-trip.

Table 52.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
5 (breakeven)	146 or 15%	26 or 15%	194 or 34%
10	115 or 28%	30 or 33%	109 or 54%
15	70 or 35%	23 or 46%	83 or 68%
20	52 or 41%	20 or 58%	62 or 79%
25	55 or 46%	11 or 64%	39 or 86%
30	59 or 53%	17 or 74%	20 or 90%
35	37 or 57%	11 or 81%	23 or 94%
50	117 or 69%	15 or 89%	25 or 98%
75	95 or 79%	9 or 95%	10 or 100%
Over 75	199 or 100%	9 or 100%	10r 100%

Table 52.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Breakout direction	63% up	58% up	37% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 53%, M 47%, H 52%	L 30%, M 26%, H 23%	L –17%, M –13%, H –11%
Throwbacks/pullbacks occurrence	66%	70%	64%
Average time to throwback/pullback peaks	7% in 6 days	8% in 6 days	–6% in 6 days
Average time to throwback/pullback ends	12 days	11 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	48%	22%	–13%
Average rise/decline for patterns without throwbacks/pullbacks	56%	31%	–13%
Percentage price resumes trend	72%	59%	48%
Performance with breakout day gap	48%	18%	–12%
Performance without breakout day gap	52%	26%	–13%
Average gap size	$0.32	$0.17	$0.30

When a throwback or pullback occurs, performance suffers, but that's only true after upward breakouts. Downward breakouts don't show a performance difference for rectangles.

Once a throwback or pullback completes, price resumes rising. That's even true in bull markets after downward breakouts. In that case,

price resumes moving up 52% of the time (with the other 48% continuing down, as the table shows).

Gaps. If a breakout day gap is absent, performance improves. That finding contradicts trading lore, which says gaps help performance. Of course, you're going to have some exceptions, and this is one of them (three, really, one in each column).

If you turn to the statistics in Chapter 1 about gaps, you'll see that they work best in bull markets, especially during downward breakouts. They can also help in bear markets, but it's almost random.

Table 52.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Tall pattern performance	60%	27%	–16%
Short pattern performance	42%	21%	–9%
Median height as a percentage of breakout price	7.9%	10.0%	7.1%
Narrow pattern performance	45%	22%	–11%
Wide pattern performance	57%	26%	–14%
Median width	53 days	59 days	49 days
Short and narrow performance	40%	22%	–9%
Short and wide performance	48%	20%	–10%
Tall and wide performance	60%	28%	–16%
Tall and narrow performance	57%	24%	–15%

Table 52.5 shows pattern size statistics.

Height. Tall rectangles perform better than short ones. That is a significant finding when you think of a rectangle as a support or resistance zone. When you have a tall mass of price coiling up and down and the breakout from that congestion region occurs, the resulting run might be worth betting on. Think of a rectangle as a tightened spring waiting to unwind. Tall patterns mean a bigger spring and more force.

To use this feature, measure the height of the rectangle from the top trendline to the bottom one and divide by the breakout price (that is, the price of the top or bottom trendline). If the result is larger than the median listed in the table, then you have a tall rectangle.

Width. Pattern width is a less reliable indicator of performance than height. However, wide patterns perform better than narrow ones (using the median as the delimiter between narrow and long). The performance difference between narrow and wide is large enough that for rectangles it might be worth considering width to give your trades an edge.

Height and width combinations. Pop quiz: If tall rectangles perform best, and wide rectangles perform best, will rectangles that are both tall and wide perform best? For rectangle tops, the answer is yes. For other chart pattern types, it's no (sometimes). You'll want to avoid short patterns, either wide or narrow, but see the table for specifics.

Table 52.6 shows volume-related statistics.

Table 52.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Volume trend	70% down	63% down	70% down
Rising volume trend performance	53%	24%	–12%
Falling volume trend performance	50%	25%	–13%
Heavy breakout volume performance	52%	25%	–13%
Light breakout volume performance	47%	22%	–11%

Table 52.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Pattern top	71%	71%	3%
Middle	24%	19%	18%
Pattern bottom	5%	2%	70%

Volume trend. Volume trends downward more than 63% of the time on average, but should you throw away a pattern with a rising volume trend?

Rising/Falling volume. Answer: no. Rectangles with upward breakouts in bull markets show a nice statistical performance advantage if they have a rising volume trend. The other two columns favor a falling volume trend.

Breakout day volume. Heavy volume seen on the breakout day tends to push price higher.

Table 52.7 shows how often price reaches a stop location. The hit rate varies depending on breakout direction and market condition, but not by much. During the search for the ultimate high (upward breakouts), price will return to the top of the pattern 71% of the time. Downward breakouts show a hit rate of 70% of the time.

If you place a stop-loss order on the side opposite the breakout, price will take out the stop 5% or less of the time. However, you might entail a large loss, so divide the potential loss with the current price to get a percentage. If the percentage gives you a chill, then perhaps you should look elsewhere for a more promising trade. That's actually sound trading advice.

Table 52.8 shows the performance over three decades. The table does not show performance of patterns 30 years old compared to children. Rather, it's a comparison of how rectangles perform in each decade.

Table 52.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	55%	–16%
2000s	59%	–10%
2010s	38%	–12%
Performance (above), Failures (below)		
1990s	12%	41%
2000s	11%	38%
2010s	24%	21%

Table 52.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Busted patterns count	244 or 26%	53 or 31%	290 or 51%
Single bust count	95 or 39%	39 or 74%	192 or 66%
Double bust count	68 or 28%	9 or 17%	9 or 3%
Triple+ bust count	81 or 33%	5 or 9%	89 or 31%
Performance for all busted patterns	–11%	–20%	49%
Single busted performance	–22%	–26%	71%
Non-busted performance	–13%	–21%	51%

Performance over time. Upward breakouts saw the best performance in the 2000s, but downward breakouts did best in the 1990s. The 2000s were the only decade to have bear markets, so I did not include them in the statistics.

Failures over time. Downward breakouts show failures becoming less frequent. However, upward breakouts show the 2010s as having double the failure rate of earlier decades. I'm not sure why that is. Any guesses?

Table 52.9 shows busted pattern performance.

Busted patterns count. This is a count of the number of rectangles that see price move no more than 10% away from the breakout before reversing and trending in the new direction. It ranges from 26% to 51%. Half of rectangle tops in bull markets after downward breakouts will bust. Holy expletive!

Busted occurrence. I sorted the types of busts into three bins: single, double, and more than two busts (triple+). Single busts take first place for frequency, and triple+ busts usually come in second followed by double busts.

Busted and non-busted performance. I compared busted rectangle tops with their non-busted brothers and found that single busted patterns outperformed their non-busted siblings. The best performance comes in bull markets after busted downward breakouts. Those see price rise an average of 71%. That's a huge gain. It measures from the top of the pattern to the new ultimate high.

Because it's obvious when the downward breakout busts in a rectangle top, you should have time to place a buy stop at the top of the pattern and enter the trade when it completes the bust. The kicker is you don't know if it'll single bust, but the statistics say that two of three trades will single bust. That's good news, too.

Trading Tactics

Table 52.10 shows trading tactics.

Measure rule, targets. The measure rule sets a target price. To find the target, compute the height of the rectangle by subtracting the value of the lower trendline from the upper one. Add the difference to the top trendline for upward breakouts and subtract it from the bottom trendline for downward breakouts. The result is the target price.

Table 52.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the rectangle from trendline to trendline. For upward breakouts, add the height to the top trendline; for downward breakouts, subtract it from the bottom trendline. The result is the target price. The bottom portion of the table shows how often this works.
Tall rectangle scalp	If the rectangle is tall enough, sell or sell short near the top trendline and buy or cover near the bottom one.
Other	Watch for rectangles forming as the corrective phase of a measured move up pattern and adjust the target price accordingly.
Stop location	Use Table 52.7 for location guidance.
Busted trade	Downward breakouts in bull markets that bust lead to strong gains.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Percentage reaching half height target	90%	83%	75%
Percentage reaching full height target	78%	60%	54%
Percentage reaching 2× height	62%	42%	32%
Percentage reaching 3× height	51%	27%	18%

For an example of the measure rule and how it applies to rectangles, consider the rectangle top pictured in Figure 52.4. The top trendline has a value of 38.75, whereas the bottom one perches at 33.75. The

difference of 5 is the height of the rectangle. If this rectangle were to break out downward, then the target price would be 28.75, or the price of the lower trendline minus the height. Since the breakout is upward, add the height to the price of the top trendline, giving a target of 43.75. Price reaches the target about a month after the breakout.

The bottom portion of the table shows how often price reaches the target. In our example, we used the full height and it was in a bull market. According to the table, price should reach the target 78% of the time, on average. For a closer target, slice the height in half and insert it into the equation. Doing that boosts the success rate to 90%.

Table 52.3 shows how that table can help when choosing a target. Read the discussion for that table for more information.

Tall rectangle scalp. If the rectangle is tall enough and providing you discover it quickly enough, you can trade the formation as it swings from trendline to trendline. Short or sell at the top trendline and cover or buy at the bottom trendline. I discussed doing this in Figure 52.2, so read that section as an example.

Only attempt this if you're an experienced swing trader.

Other. Before placing a trade in a rectangle top, see if it is part of a larger pattern. Sometimes, the rectangle is the horizontal part, called the corrective phase, of a measured move up chart pattern. Knowing that a rectangle is a subpart of a measured move allows you to get a better gauge on the expected price move.

Stop location. Table 52.7 shows the probability of price hitting a stop, based on various rectangle locations. Be sure to change the potential loss into a percentage of the current price to see if you can tolerate such a loss. A common stop-loss target is 8%.

Busted trade. Because the performance of the rectangle top isn't that good, consider trading busted downward breakouts in bull markets. Price must drop by no more than 10% below the bottom trendline, reverse, and close above the top of the rectangle. If price rises more than 10%, it's a single busted pattern. Single busts see an average rise of 71%. Also, single busted patterns occur 66% of the time, so you should be able to have some luck with this setup.

Table 52.11 shows special features of rectangle tops: partial rises and declines. Figure 52.1 shows an example (not really a good one, though) of what a partial decline looks like, in case you are unfamiliar with them. Consult the Glossary for more information on partial rises and declines.

Table 52.11 Special Features

Description	Bull Market	Bear Market
Partial rise, success	75%	71%
Partial decline, success	79%	74%

A partial decline is slightly more reliable in predicting the breakout direction than is a partial rise, as the table shows. In many cases, it may be difficult to determine when a partial rise or decline is happening because of the way price tends to pause as it crosses the rectangle, but if you can identify them, they allow entry into a trade before the breakout. On average, your profits should be larger with lower risk, providing you use stops to limit adverse moves.

If price touches the horizontal rectangle trendline and reverses instead of breaking out, close out the trade immediately. Chances are price is going to cross the rectangle to the other side.

Experience

I have used rectangle tops to enter trades. In several of the trades, some of which I discuss below, I'll buy the breakout and price will reverse, often within a few days. Not only will price reverse, but it collapses, many times staging a big loss (FMC, WEX, LRW, and DFG).

FMC Corp

From a low set in 2003, FMC Corp. (FMC) stock continued an uptrend broken only by the 2008 bear market (when price dropped 64%). Once that completed in October, the stock resumed the uptrend and suffered another setback in the summer of 2011 when the stock dropped 31%.

When a rectangle top appeared in late 2013, I became interested because I was looking for a stock with a history of a long-term uptrend. My thinking was that all I had to do was pick the right stock, open my hand, and collect money for as long as I held it.

I made a perfect entry by buying the stock at the opening price the day after an upward breakout. The stock peaked two days later and then dived. It busted the upward breakout by closing below the bottom rectangle trendline. Drat!

The stock reversed and climbed 25%, so I was making money again. All of this didn't bother me too much. I was in the trade for the long term.

The blasted stock reversed again and started heading lower. When the company issued an earnings warning, I decided to sell and took a loss (6%) on a small position. The stock dropped to almost 51, a decline of 39% as measured from the prior high. This is one of the rectangles that triple busted.

- Lesson: When fundamentals change for the worse, sell, which is what I did and avoided a substantial loss.
- Lesson: Own a diversified portfolio so losses will hurt like pinpricks instead of amputation.

Northwest Pipe Co

Northwest Pipe (NWPX) suffered an 82% decline between 2014 and 2016. I became interested in the recovery when I saw a cloud bank pattern. The base of the cloud was 19 to 21, which became my target. When a rectangle top appeared, I bought on the breakout day. The stock went vertical and neared my target less than 2 months after I bought. Did I sell? No. This was a long-term holding so I hung on.

The stock retraced back to the rectangle top, giving back all of my gains. Then it turned and climbed back to the cloud base. In January 2018, I wrote in my trading notebook, “This didn't go anywhere this past year, but what scares the willy out of me is the negative analyst view.” Because the stock had hit my target, I sold and made over 50% on the trade. For an expanded review of the cloudbank trade, see the Experience section of Chapter 18.

- Lesson: For a cloudbank play, if the stock reaches the target sooner than expected, sell. Remember, it often takes as long to traverse the cloud as it does to reach it. I could have sold a year earlier than I did and looked elsewhere for a more promising trade.

Wex Inc

Wex Inc. (WEX) was a poorly executed trade. I bought into the stock using a buy stop and got in at the breakout, right on time. Price threw back and busted the upward breakout when it slid below the bottom of the rectangle, dropping 7%. The stock recovered and made a new high, then dropped 36%. *Ouch*. This trade was meant as another long-term holding, and thankfully, I held only a small position, too.

I waited out the decline and rode the stock back up. In 2019, it formed an unconfirmed head-and-shoulders top, so I sold the thing and pocketed 7%. Five months later, the stock was 65% below where I sold, a casualty of the Covid-19 pandemic. Thank goodness I sold.

- Lesson: Bad trades often go bad quickly. The smart play would have been to let a stop take me out of the trade when it closed below the rectangle bottom. I would have taken a loss but traded

it well. Even though this was a small position and I made a profit, the 15-month hold time was too long for such a meager return.

Labor Ready

A long and choppy rectangle top formed in Labor Ready (LRW) starting from June 2005 to the spring of 2006. When the stock broke out of the congestion region, I bought. From my notes: “The only problem I see with the trade is the market direction [is] predicted to be down.”

Four days later, I was out of the trade for a 5% loss. Well, spit! What happened? From my notebook: “Sell reason: Failure swing in RSI [Wilder's relative strength index] suggested price would drop. With the consolidation region showing hints of moving down, I felt it was time to sell. Unfortunately, I didn't sell yesterday but dumped it today using my broker's 'market on close' selling option.

- “Lesson: Since I saw the failure swing, I should have sold at market close (MOC: market-on-close) the day before I did. Had I done that, I could have saved $. But I remembered to try that 3 minutes after the market closed and my broker needs a 20-minute head start for those MOC trades.”

About 2.5 months later, the stock was 43% lower, so I dodged a bullet.

Delphi Financial Group

Delphi Financial Group (DFG) seems to be typical of my rectangle trades. In this case, I bought after a throwback to a long rectangle top that formed from September 2006 to May 2007. Price slid back below the top of the rectangle, so I sold for a 5% loss. The stock continued going down and bottomed 82% below my sale price.

- Lesson: Sell quickly before a loss becomes larger.

American Power Conversion Corp

American Power Conversion Corp. (APCC) is an interesting trade after a good earnings report. In 2005, the stock broke out upward from a rectangle top after the company announced quarterly earnings

that were better than expected. Price spiked from a close of 20.71 to a high of 25 but closed at almost 23. I waited for price to return to earth over the next 10 days or so.

Here's what I wrote in my notebook: “Buy reason: Rectangle throwback completed on good earnings. I expect the next quarter to report good earnings, too, sending price higher. The rectangle will support the stock, so risk is low despite a possible dropping market.”

I trailed my stop higher as price climbed, and eventually the stock hit my stop and took me out of the trade for a gain of 11%.

- Lesson: Price often retraces for a week to 10 days before bottoming after a good earnings announcement. The retrace (after it completes) represents a good buying opportunity, especially if you expect another good quarter to follow.

Sample Trade

Dave is an artist. It is tough making a living, and he wants to move to the computer world and become a graphics artist. He has been playing around with some hardware and software that duplicate the feel of a brush on various textures but wants to get the latest versions.

Recognizing chart patterns comes easily to him. With his keen eye, he has been on the prowl for a lucrative stock play. That is one reason he stumbled across the rectangle shown in **Figure 52.4**, but he did not spot the rectangle in a timely fashion. The only reason he noticed it is because of the throwback.

Throwbacks and pullbacks are peculiar enough with their hooking retrace that they are easy to spot. One has only to look back and identify the associated chart pattern (a rectangle top, in this case).

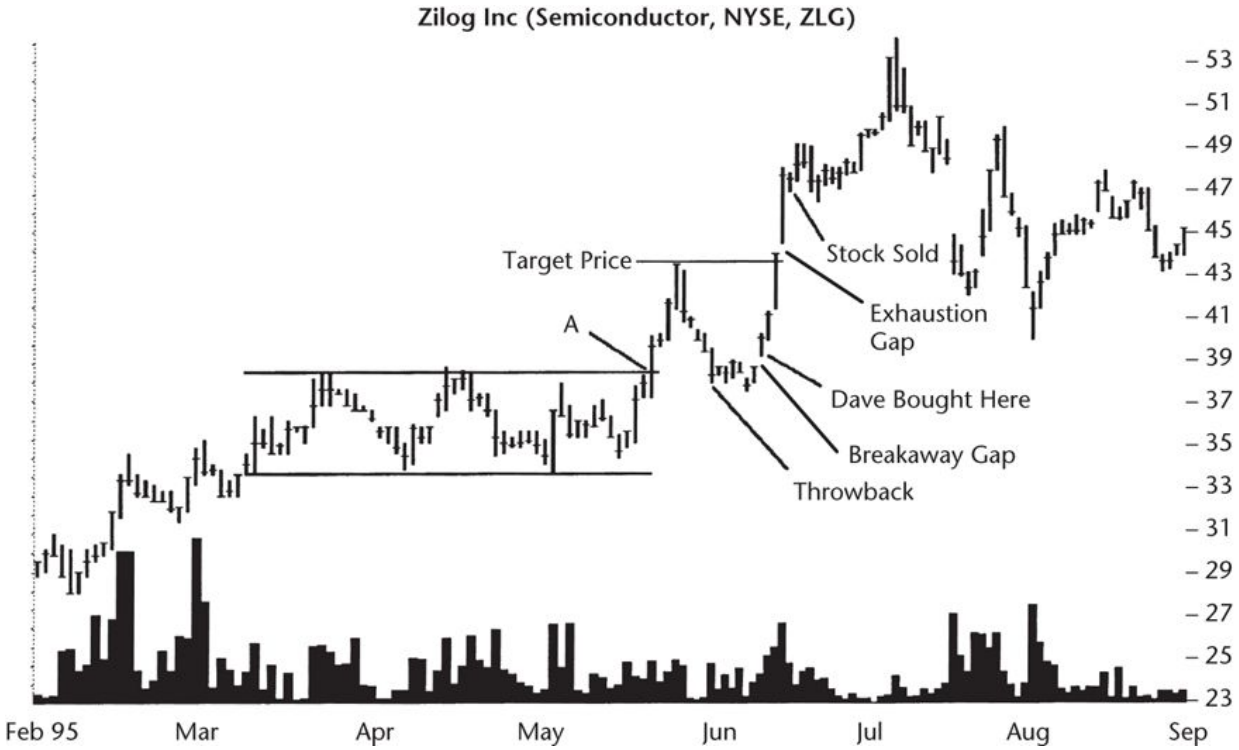


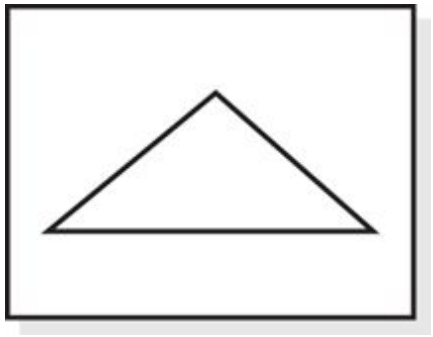
Figure 52.4 Rectangle top with breakaway and exhaustion gaps. Dave bought this rectangle after the throwback completed.

Dave computed the formation height and applied it to the top of the rectangle to get the expected minimum price move. Did he pull the trigger when price threw back to the pattern? No, he waited. He

followed the stock closely, and when it gapped up (a breakaway gap), he bought and received a fill at 40.

Each day the stock moved higher, and in 3 days it had reached his target price of 43.75. The day after that the stock gapped again (exhaustion gap), signaling an impending end of the rise. The day after that, price faltered, and that is when he sold and closed out his position at 47.50. He netted over $7 a share or 18% in less than a week.

53
Roof



RESULTS SNAPSHOT

Appearance: Looks like a pyramid with a central high peak and down-sloping sides with a flat or nearly flat bottom.

Upward Breakouts

	Bull Market
Reversal or continuation	Short-term bullish continuation
Performance rank	35 out of 39
Breakeven failure rate	26%
Average rise	34%
Volume trend	Downward
Throwbacks	60%
Percentage meeting price target	62%
See also	Head-and-shoulders tops, complex head-and-shoulders tops

Downward Breakouts

	Bull Market
Reversal or continuation	Short-term bearish reversal
Performance rank	16 out of 36
Breakeven failure rate	22%
Average drop	15%
Volume trend	Downward
Pullbacks	66%
Percentage meeting price target	63%

The roof pattern is a rare gem that looks like a pyramid. *Gem* is the incorrect word because the performance of the 375 patterns (both bull and bear market patterns) I found is dismal. It has a 26% failure rate after upward breakouts in bull markets and an average rise of just 34%, ranking the pattern near the bottom of the list at 35 out of 39 patterns, where a rank of 1 is best. I even considered removing the pattern from the book because it's so rare. Downward breakouts show better performance with a rank of 16 out of 36 patterns.

When you see a roof, you might think it's a head-and-shoulders top. Indeed, a head-and-shoulders top can be a roof, but a roof may not be a head-and-shoulders top. The differences between a head-and-shoulders and a roof revolve around the inbound (leading to the pattern) and outbound price trend (after the breakout). To some of you, this may be a pa-tay-toe and pa-tah-toe thing. However, it's more complicated than that because the ideal roof doesn't have shoulders.

Let's take a tour of the pattern to see what a roof looks like.

Tour

I discovered the roof pattern in early 2005. I thought it looked like the top half of a diamond, but an acquaintance of mine called it a roof. The name fit, and it stuck.

Figure 53.1 shows an example of a roof pattern (A) in a downward price trend. It sports a flat bottom and sides that slope downward from a central peak, making it appear like a roof. Price touches the bottom trendline multiple times and the pattern's sides reach for the sloping trendlines, too.

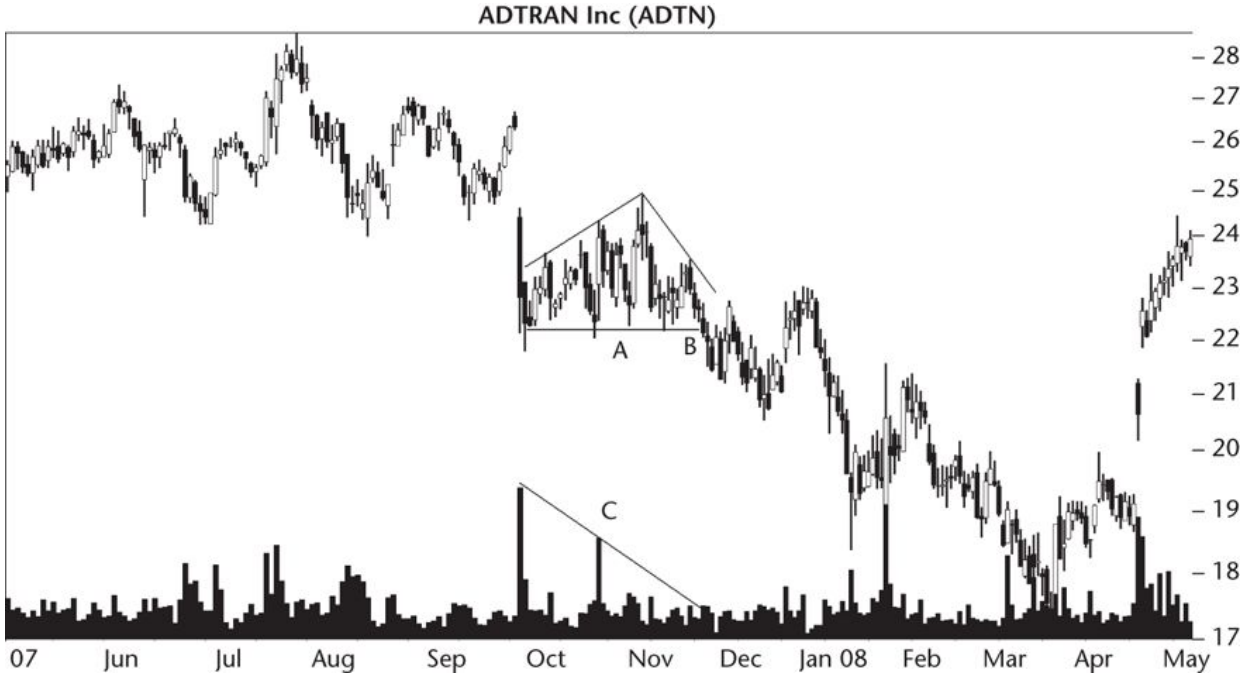


Figure 53.1 This roof pattern appears in a downward price trend.

A downward breakout happens at B when price closes below the bottom of the pattern.

Notice that volume (C) slopes downward, which is typical for this pattern.

This pattern isn't a complex head-and-shoulders top for several reasons. First, price drops down into the pattern from the top (in this example). A head-and-shoulders top needs price to rise up into the start of the left shoulder.

Second, there are too many potential shoulders on the left side that don't have mirror shoulders on the right. It doesn't *look* like a head-and-shoulders top, simple or complex. The roof can break out upward, but a head-and-shoulders top cannot.

Let's discuss identification for this rare pattern.

Identification Guidelines

Table 53.1 shows identification guidelines, and **Figure 53.2** shows another example of the roof pattern.

Appearance. Look for price to form a pyramid shape like that shown at A in Figure 53.2. The inbound price trend can be from any direction (up or down), so it is not a factor you should consider. You'll want to avoid selecting patterns that are simple or complex head-and-shoulders tops. Those have multiple shoulders (which mirror across the head both in time and price) and *will break out downward*. In fact, if you think you've found a roof pattern, you're probably wrong because this pattern is quite rare. So check for a head-and-shoulders top or complex head-and-shoulders top.

Table 53.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a pyramid with a central high peak and down-sloping sides with a flat or nearly flat bottom.
Trendline touches	At least three minor low touches on the bottom. Price should touch the side trendlines, too, but I don't set a minimum touch count for them. The side trendlines should slope downward from a central peak.
Horizontal trendline	The bottom trendline should be horizontal or nearly so. If it slopes, then you might be looking at a simple or complex head-and-shoulders top.
Volume	Trends downward the majority of the time from pattern start to end.
Breakout direction	Downward most often when price closes outside one of the trendline boundaries, but the breakout can be upward, too.
Duration	The median width is about six weeks long (47–56 days), but I set no minimum or maximum.

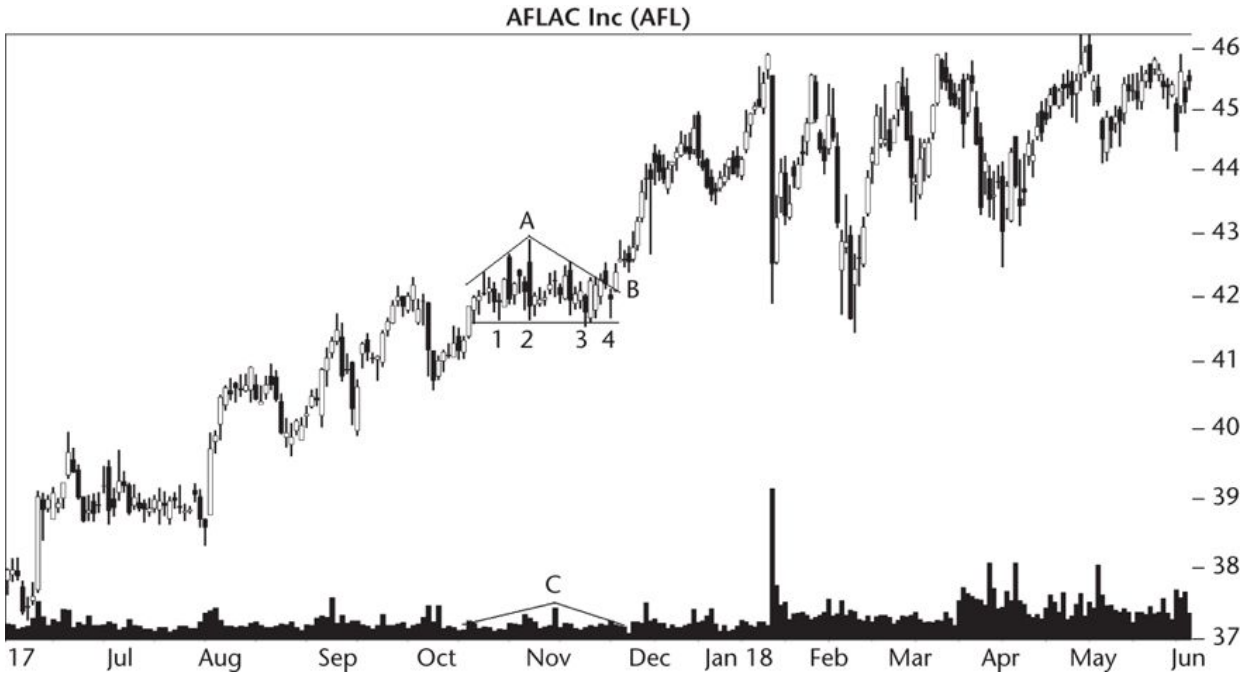


Figure 53.2 This roof may look like a head-and-shoulders top, but the breakout is upward, invalidating the head-and-shoulders.

Trendline touches. Look for at least three touches of the bottom trendline. Each touch should be a distinct minor low, but allow exceptions. The figure shows four touches, conveniently labeled 1 through 4.

Horizontal trendline. The bottom trendline should be horizontal or nearly so. The two top trendlines should slope downward from a peak, like that shown, with price touching each trendline.

Volume. Volume typically trends downward from left to right until the breakout, where it might be higher. In the figure, I show an irregularly shaped volume trend (C) that peaks in the middle of the pattern.

Breakout direction. A breakout occurs when price closes beyond one of the trendlines. Often the stock will have a downward breakout 58% of the time, leaving 42% of roofs breaking out upward. The roof shown in Figure 53.2 has an upward breakout at B when the stock *closes* above the AB trendline.

Duration. I did not set a minimum duration for roofs, but they typically last about six weeks. It takes several weeks to create the flat base and sloping roof structure.

Focus on Failures

Figure 53.3 shows what a roof failure looks like. The pattern outlined at A has a left shoulder, B, head at C, and right shoulder, D, and yet it's not a head-and-shoulders top. Why? Because price breaks out upward (at E). Instead, it's a roof chart pattern. This roof has the required flat bottom, but it also shows a down-sloping volume trend at F (which is typical).

Figure 53.3 Price breaks out upward from this roof but hits overhead resistance and reverses.

Table 53.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	140	190
Reversal (R), continuation (C) occurrence	24% R, 76% C	79% R, 21% C
Reversal, continuation performance	37% R, 33% C	–16% R, –14% C
Average rise or decline	34%	–15%
Standard & Poor's 500 change	9%	–1%
Days to ultimate high or low	158	59
How many change trend?	44%	32%

Price rises from breakout E to G, just above the top of the pattern, before reversing. Notice that prior peak H poses overhead resistance to the advance. That resistance stops the upward move at G, and the stock eases lower after that as bearish selling pressure overwhelms bullish buying demand.

You'll find that underlying support will stop a downward breakout and overhead resistance will halt an advance. It's as if the roof pattern is just a place where the stock seeks shelter before resuming a trend that is too exhausted to last much longer.

Statistics

Table 53.2 shows general statistics for the roof pattern.

Number found. I catalogued 375 roofs in 283 stocks from 1991 to mid-2019 despite searching over 1,300 stocks. However, that included both bull and bear markets. The bear market totals were too few to be worth including in the tables that follow. Even bull market samples are scarce.

Reversal (R), continuation (C) occurrence. The table shows the roof sorted by how they behave as reversals or continuations. If price entered the roof from the top and exits downward, then it's a continuation pattern. A reversal in this case would have an upward breakout, reversing the downward inbound price trend.

Most of the roofs with upward breakouts were continuation patterns (meaning an upward inbound trend, too). Downward breakouts acted as reversals of the upward trend most often.

Reversal/continuation performance. The best performance came from patterns that acted as a reversal of the downtrend. Those patterns broke out upward and gained an average of 37%. Reversals with downward breakouts also outperformed continuation patterns.

Average rise or decline. The average rise or decline ignores whether the roof acted as a reversal or continuation and just measures the rise or decline. The best performance came after an upward breakout.

Standard & Poor's 500 change. Comparing the 34% average gain from roofs (upward breakouts) with the S&P over the same holding period shows that the general market gained just 9%. Downward breakouts retained more value, though, losing just 1% versus the roof's 15%.

The values for the index also suggest how the general market helped boost the performance of the individual stocks.

Days to ultimate high or low. The average time to reach the ultimate high or low varies, depending on the breakout direction. The table shows it can take an average of 2 to 6 months before the trend ends.

How many change trend? This line counts the number of roof patterns that see price move more than 20% from the breakout price. Upward breakouts are the best performing but still fall well short of what we see in other chart pattern types. I use this as a gauge for how well a pattern sees price trend (that was the objective, anyway). The higher the number, the better the pattern trends.

Table 53.3 shows failure rates sorted by breakout direction. The failure rate gauges how far price moves after the breakout and before the trend reverses.

For example, I found that 36 patterns or 26% of the total failed to rise more than 5% after an upward breakout. The 5% benchmark is what I call the breakeven failure rate. Just over half (56%) failed to see price rise more than 20%.

The results show how treacherous trading a roof pattern can be. Failures climb rapidly for small moves.

Table 53.4 shows breakout and post-breakout statistics for the roof pattern.

Breakout direction. Most of the time (58%) the breakout will be downward from a roof.

Table 53.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	36 or 26%	41 or 22%
10	23 or 42%	38 or 42%
15	8 or 48%	29 or 57%
20	11 or 56%	22 or 68%
25	4 or 59%	20 or 79%
30	9 or 65%	15 or 87%
35	4 or 68%	13 or 94%
50	14 or 78%	12 or 100%
75	11 or 86%	0 or 100%
Over 75	20 or 100%	0 or 100%

Table 53.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	42% up	58% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 32%, M 31%, H 36%	L –16%, M –17%, H –13%
Throwbacks/pullbacks occurrence	60%	66%
Average time to throwback/pullback peaks	4% in 6 days	–6% in 6 days
Average time to throwback/pullback ends	13 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	26%	–14%
Average rise/decline for patterns without throwbacks/pullbacks	46%	–18%
Percentage price resumes trend	42%	60%
Performance with breakout day gap	42%	–16%
Performance without breakout day gap	33%	–15%
Average gap size	$0.36	$0.37

Yearly position, performance. Sorting performance into the three yearly price ranges (low, middle, high), we see that the best performance comes from roofs within a third of the yearly high (upward breakouts). Those appear to be momentum plays: buy high, sell higher. Downward breakouts do best when the breakout is in the middle of the yearly range with performance from the low range just a percentage point behind.

Throwbacks and pullbacks. Throwbacks occur 60% of the time, and pullbacks happen a bit more frequently: 66%. By definition, price must leave the chart pattern, move a bit away (leaving whitespace behind), and return to or come close to the breakout price within 30 days.

I found that price trends for 6 days, moving between 4% and 6% (depending on breakout direction) before starting the return trip. The

entire round-trip move takes 12 or 13 days on average.

I sorted roof performance into two bins: those with throwbacks/pullbacks and those without. The results show that performance is better if a throwback or pullback does not occur. It's as if a throwback or pullback robs the stock of momentum, causing price to not move as far. This behavior is typical for chart patterns of all types.

Price resumes trending between 42% and 60% of the time. I checked the statistics because I thought upward breakouts would show a higher percentage than downward breakouts, but the numbers are correct. It suggests that roofs are most comfortable with downward breakouts (even when they break out upward. Confused? Price breaks out upward but would rather drop. That's clear after a throwback sees price continue lower 58% of the time. That's not a typo: 42% continue up, 58% drop).

Gaps. Performance improves if a gap occurs on the breakout day. For example, a stock's average rise with a breakout day gap from a roof pattern was 42%. That result compares to price climbing just 33% without a breakout day gap. The average gap size varies, as the table shows.

Because I measure performance using the opening price the day *after* a gap, you can trade the stock after the gap appears and partake of, hopefully, a bigger move.

Table 53.5 tells if size matters, and for chart patterns it often does.

Table 53.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	40%	–18%
Short pattern performance	29%	–12%
Median height as a percentage of breakout price	9.2%	8.7%
Narrow pattern performance	27%	–14%
Wide pattern performance	41%	–17%
Median length	50 days	47 days
Short and narrow performance	30%	–13%
Short and wide performance	26%	–12%
Tall and wide performance	47%	–20%
Tall and narrow performance	21%	–16%

Height. Tall patterns outperform short ones, which is typical behavior for most chart patterns. To determine this, I measured the height of each roof and divided it by the breakout price. If the result was higher than the median shown in the table, the roof was tall.

Because the performance differences are startling, it might be a good idea to determine if your roof is short or tall before trading it. Avoid short patterns.

Width. Wide patterns perform better than narrow ones on average, according to the results I saw. I measured the width from start to end in the pattern and compared it to the median width (shown in the table) for all roofs.

Height and width combinations. Looking at the combination of height and width, we find that tall and wide roofs outperform in both breakout directions. That makes sense because tall patterns outperform and wide patterns outperform, so the combination should also do well. That may sound obvious, but it's not always the case with other types of chart patterns.

Table 53.6 shows statistics related to roof volume.

Volume trend. I used linear regression to determine whether volume was rising or falling from the start to end of the roof. Most of the time, you'll see volume trending downward.

Rising/falling volume. Upward breakouts do best with a rising volume trend and downward breakouts show no significant performance difference.

Breakout day volume. For the breakout day volume, I compared the breakout day's volume with the prior 1-month average. Heavy volume on the breakout day propels a stock upward, but doesn't do anything for downward breakouts. More samples might change the results.

Table 53.7 shows how often price, after the breakout, hits the top, middle, or bottom of the roof. I don't show upward breakouts because I haven't yet taught my computer how to handle trendline breakouts.

For downward breakouts, I used the *highest high* between the breakout and the ultimate low and compared that to the roof's price.

For example, placing a stop at the top of a roof after a downward breakout would see the stop hit just 3% of the time on average. Often, this will happen during a pullback—within 2 weeks of the breakout. Placing a stop below the bottom of the pattern will trigger 65% of the time, but the loss will be much smaller than if the stop were placed in the middle or top of the roof.

Table 53.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	66% down	72% down
Rising volume trend performance	38%	–15%
Falling volume trend performance	32%	–16%
Heavy breakout volume performance	38%	–15%
Light breakout volume performance	29%	–15%

Table 53.7 How Often Stops Hit

Description	Down Breakout
Pattern top	3%
Middle	14%
Pattern bottom	65%

Table 53.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	30%	–18%
2000s	46%	–9%
2010s	31%	–14%
Performance (above), Failures (below)		
1990s	9%	6%
2000s	5%	8%
2010s	12%	7%

Table 53.8 shows the performance of roof patterns over time for bull markets.

Performance over time. I sorted the patterns into three bins by the date of the breakout. The best performance came from roof patterns with upward breakouts in the 2000s with gains averaging 46%. The worst performance was in the 1990s with gains of 30%, but the 31% rise during the 2010s was a close second.

Downward breakouts showed the best performance in the 1990s (drops averaged 18%) with the 2000s showing drops averaging just 9%.

Failures over time. I used the breakeven failure rate (5%) as the benchmark and sorted the date of the breakout from a roof into one of the three "decade" bins. The decade (2000s) with the best performing roofs also had the fewest failures, at 5% (upward breakouts). For downward breakouts, the 1990s showed the best performance and the fewest failures, at 6%.

Table 53.9 shows how busted patterns performed. Samples are few for all categories. With few samples, the results are likely to change.

Busted patterns count. I found most of the busted patterns after a downward breakout, so let's talk about those.

A busted roof occurs when the breakout is downward (in this example) and price drops no more than 10%. Price reverses and closes above the *top of the pattern*, busting the downward breakout.

Table 53.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	45 or 32%	74 or 39%
Single bust count	22 or 49%	52 or 70%
Double bust count	15 or 33%	4 or 5%
Triple+ bust count	8 or 18%	18 or 24%
Performance for all busted patterns	–15%	36%
Single busted performance	–25%	49%
Non-busted performance	–15%	34%

I found 39% of the patterns I looked at busted in this manner (or went on to double or triple bust).

Upward breakouts can bust, too, when price breaks out upward, reverses before rising too far, and closes below the bottom of the roof. The busting can continue for both breakout directions if the move is less than 10% before price reverses and trends to the other end of the roof. I stopped counting at three busts (which I call triple+, for three or more busts).

Busted occurrence. Most of the busted patterns were single busts (70%), followed by triple+ busts (24%). The Glossary gives details on single, double, and triple+ busts, so check there if you're confused.

Busted and non-busted performance. Comparing the performance of all busted patterns (no matter how many busts occurred) with single busts, we find that single busted patterns outperformed in all cases, which is typical for chart patterns.

For example, single busted patterns with downward breakouts reversed and gained 49% above the top of the roof. That compares to the combined results of all busted types (single, double, and triple+ busts), which gained an average of 36%. If you look at non-busted performance, they showed gains averaging 34%, below both the all-busted and single busted counts.

Your eyes can slide across the table and compare the last three lines to determine if busted patterns are worth trading compared to their non-busted counterparts.

Trading Tactics

Table 53.10 shows trading tactics.

Measure rule, targets. The table explains how to compute the measure rule for roofs. Like most patterns, compute the height of the pattern and either add it to the price of the top of the roof or subtract it from the bottom of the roof to get a target. The lower portion of the table tells how often various heights work.

Table 53.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the roof from central peak to horizontal bottom. For upward breakouts, add the height to the price of the peak to get a target. For downward breakouts, subtract the height from the bottom of the pattern to get a target. The bottom portion of the table shows how often the measure rule works using various heights.
Stop location	Use Table 53.7 to help you decide where to place a stop.
Avoid trading	With such poor performance, perhaps you should look elsewhere for a better performing chart pattern.

Target	Up Breakout	Down Breakout
Percentage reaching half height target	76%	81%
Percentage reaching full height target	62%	63%
Percentage reaching 2× height	41%	29%
Percentage reaching 3× height	34%	14%

As you would expect, the closer the computed target is to the breakout, the better than chance of reaching it. For example, using half the height of the roof after an upward breakout, price will reach or exceed the target 76% of the time. Using three times the height of

the roof, price will reach the target, on average, about a third of the time (34%).

Of course, if you don't place a stop, the chances increase that if you hold onto the position long enough, it will reach the target you set. They key is to try to achieve the target as quickly as possible so you can find a new pattern, set a new target, and make lots of money trading.

Once you have found a target, compute the distance from the roof to the target as a percentage of the current price and then consult Table 53.3.

For example, if the distance to the target is 5 and the breakout price (current price) is 50, that's a 10% move. Let's also suppose it's an upward breakout in a bull market. Table 53.3 says that 42% of roofs will fail to see price rise more than 10%. Even though the 10% move is small, the failure rate is high.

Stop location. See Table 53.7 for the risk of using a stop. Other types of stops may work better, such as placing a stop below a minor low (for an upward breakout) or using a volatility stop (the stop location is based on how volatile the stock is).

Low-priced stocks tend to be more volatile than high-priced ones, so stops should be located farther away for low-priced stocks. What are low-priced stocks? Answer: Those trading below $10 a share (or even $20 a share).

Avoid trading. With such poor performance coming from roof patterns, perhaps you should not trade these at all, especially because they are rare. However, you may wish to experiment with them. Perhaps you can improve performance by seeing where in the price trend they work best and avoid setups where roofs have failed in the past. I've always found it valuable to search for the same pattern in the same stock or in stocks of the same industry. Study how they work and use that information as a buying guide.

Sample Trade

Ted is interested in the stock shown in Figure 53.4 because of the roof pattern, but also because the electric utility pays a dividend. Although he knows that capital gains may suffer if a company pays dividends, he likes to have the income associated with them. Dividend-paying stocks also tend to retain more of their price in down markets.

“When the stock broke out upward at A, I bought at the open the next day at 52.24. Quick as a bunny, I set a stop a penny below the bottom of the chart pattern [51.34 (B)].”

The stock climbed but soon rounded over and returned to the breakout price. “That's a throwback,” he said and pointed to C. Fortunately, the stock only dropped to 51.81, which was above his stop price.

He calculated the height of the pattern from the peak at D (53.40) to the low at B (51.35) for a height of 2.05. That gave a target of 53.40 + 2.05 or 55.45.

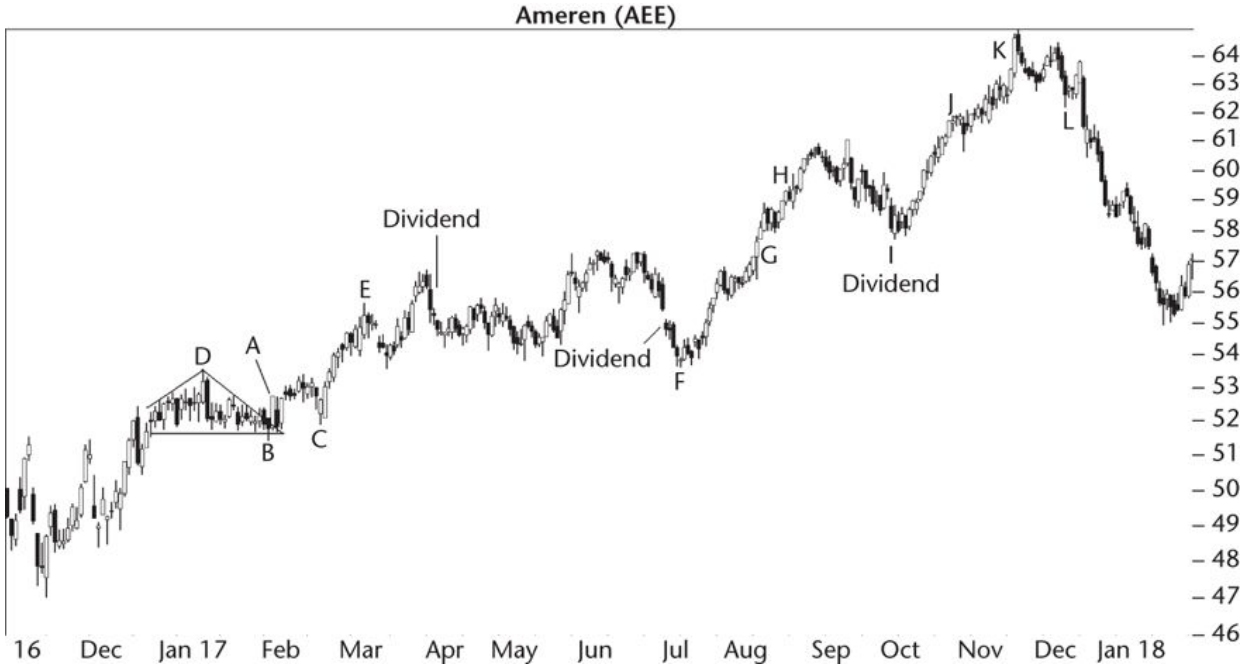


Figure 53.4 This roof leads to a big gain with dividends included.

The stock reached the target at E, peaking at 55.51. Did he sell there? “No. If this were a swing trade, I'd have placed a limit order to sell at

the target price, but in this case, I wanted to hold onto the stock longer to collect dividends."

Here's what he did. Based on the height of the roof, he found the next target: 55.45 + 2.05 or 57.50. That became the new target. He raised the stop-loss order to the top of the pattern, D, at 53.40.

Price meandered higher and came close to stopping him out at F when the stock bottomed at 53.54. At G, the stock exceeded his new price target of 57.50 when it peaked at 57.65.

He set a new target of 57.50 + 2.05 or 59.55 with a new stop at 55.45 (the price of the first target).

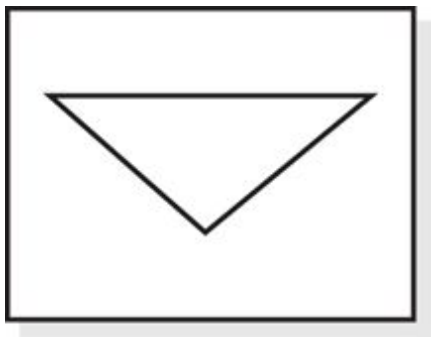
Price reached that target at H. He raised the stop to the second target or 57.50 and calculated a higher target of 61.60 using the same approach.

At I, price bottomed at 57.56, missing his stop again. Price moved higher and tagged his target at J. Once more he raised his target another 2.05 to 63.65 and stop to 59.55. The stock cooperated and reached his target at K.

He set a new target of 65.70 and a stop of 61.60. This time, though, the stock failed to reach his new target. Instead, the stock dropped to his stop order and filled at 61.60.

He bought the stock at 52.24 and sold it at 61.60 for $9.36 per share gain plus three dividend payments of 46 cents each, for a total of $10.74 per share or just over 20%.

54
Roof, Inverted



RESULTS SNAPSHOT

Appearance: Has a horizontal or near-horizontal top with a V-shaped bottom, making the pattern look like the bottom half of a diamond.

Upward Breakouts

Reversal or continuation	Long-term bullish continuation
Performance rank	37 out of 39
Breakeven failure rate	23%
Average rise	34%
Volume trend	Downward
Throwbacks	58%
Percentage meeting price target	65%
See also	Head-and-shoulders bottom, complex head-and-shoulders bottom

Downward Breakouts

Reversal or continuation	Short-term bearish reversal
Performance rank	26 out of 36
Breakeven failure rate	25%
Average drop	14%
Volume trend	Downward
Pullbacks	64%
Percentage meeting price target	47%

After discovering the roof pattern in 2005, I guessed that there must be an inverted version, too, so I went hunting and uncovered this pattern.

The rank shown in the above Results Snapshot says that I wasted my time searching for the inverted roof. The pattern doesn't perform well at all. Upward breakouts show a tiny 34% rise (compared to a 42% average rise for other chart patterns) paired with a failure rate (23% versus a typical 15% rate for other chart patterns).

Downward breakouts show a massive 25.1% failing to see price drop more than 5% after the breakout, but that's close to the 24.7% average for all patterns with downward breakouts. Over a third of the patterns will bust their breakouts, too. We'll see that later.

Are there any redeeming qualities for the inverted roof? Yes. It looks pretty. The pattern can act like a diamond top, where price makes a strong push upward and then forms the inverted roof. A downward breakout from the inverted roof means price could retrace most of the rise. I discuss this scenario in the Sample Trade.

Let's take a tour and look at a few examples.

Tour

Figure 54.1 shows an example of an inverted roof on the daily chart. Price trends downward (in this example) leading to the start of the inverted roof that appears at A. Price bounces between a horizontal (or nearly so) top trendline and a V-shaped bottom multiple times. Price should touch each trendline several times and cross the pattern from top to bottom, filling the space with price movement.

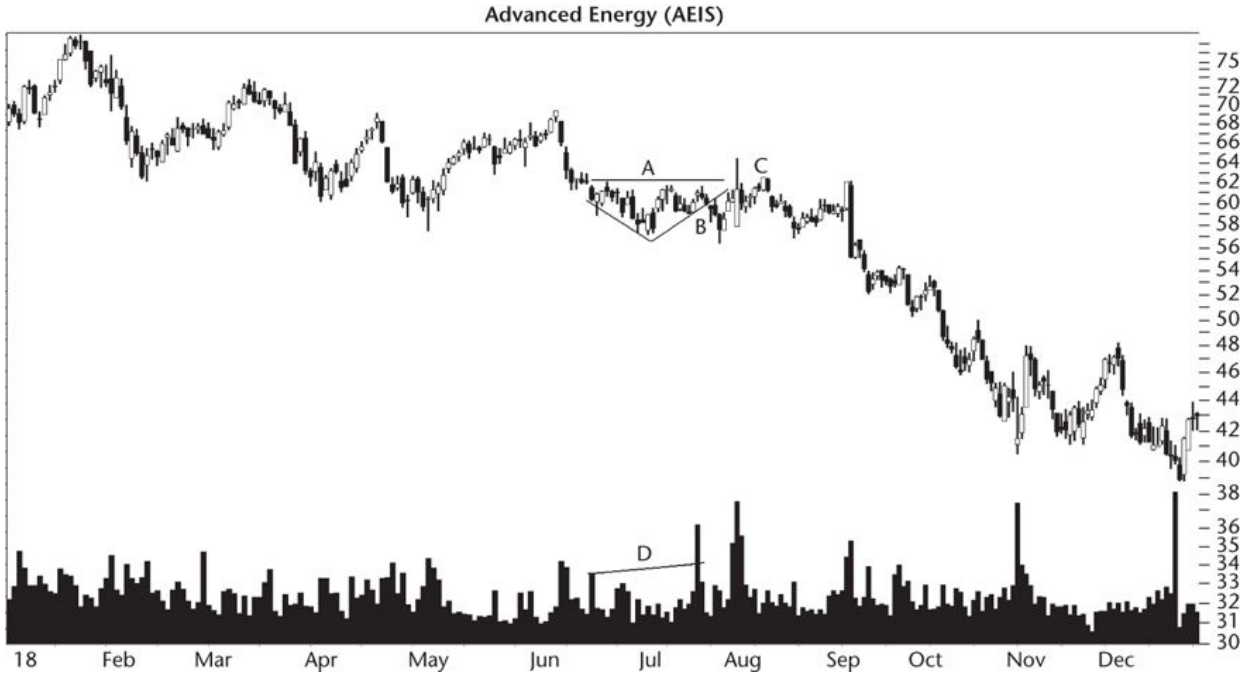


Figure 54.1 This inverted roof occurs in a downtrend and has a downward breakout.

This inverted roof has a downward breakout, which occurs at B, when price closes outside of the trendline boundary. The breakout can be in any direction and it splits about evenly between up and down. Price rises to C and closes above the top of the pattern, which busts the downward breakout. Price tumbles and double busts the pattern.

My eyes say I'm wrong, but linear regression says volume trends upward from pattern start to end. I show that at D. It's probably due to the high spike near the end of the pattern.

If you look closely at the inverted roof, you might see left and right shoulder bottoms, suggesting this is really a head-and-shoulders bottom. However, this inverted roof breaks out downward, so it's not

a head-and-shoulders bottom (by definition, because they always breakout upward).

Many inverted roofs have price trending upward into the start of the pattern, so any pattern forming would be a top and not a bottom. Again, that's by definition. Coupled with a horizontal “neckline” (top) and you have the making of an inverted roof like that shown.

Let's discuss the guidelines for finding inverted roofs.

Identification Guidelines

Table 54.1 shows the identification guidelines, and refer to **Figure 54.2** as another example of an inverted roof at A.

Appearance. Look for price that has a flat top and V-shaped bottom. The top need not be horizontal, but it should be close. The bottom of the pattern should form a V, with price staying within two trendlines, but be flexible.

Table 54.1 Identification Guidelines

Characteristic	Discussion
Appearance	Has a horizontal or near-horizontal top with a V-shaped bottom, making the pattern look like the bottom half of a diamond.
Price trend	Often (67% of the time) the inbound price trend will be upward. A downward price trend with an upward breakout may be a head-and-shoulders bottom.
Symmetrical	If you split the pattern vertically down the center, the two halves should appear symmetrical, but be flexible. Price should near or touch the top line several times.
Volume	Trends downward the majority of the time.
Breakout direction	The breakout can be in any direction. A close outside the pattern boundary signals a breakout.

You will want to avoid an inverted roof that is really a head-and-shoulders bottom (or complex head-and-shoulders bottom). That means an inverted roof pattern should see price enter the pattern from the bottom, exit downward, or have no discernable shoulders (one on each side of the divot in the pattern). Again, be flexible. If you accidentally find a head-and-shoulders instead of an inverted roof, you may be rewarded with better performance.

Price trend. The inbound price trend can be either up or down, but leans heavily toward being upward. Figure 54.2 shows an upward price trend leading to the start of the inverted roof. Figure 54.1 shows a downward inbound trend. If the price trend is downward, check for

a left and right shoulder followed by an upward breakout. If you find all of that, then it's a head-and-shoulders bottom and not an inverted roof.

For upward inbound price trends, don't worry about searching for shoulders. Even if it has them, it's not a head-and-shoulders bottom.

Symmetrical. The two halves of the V-shape should be similar in size and shape. It should *look* like the bottom half of a diamond. Price should touch the trendlines multiple times, but often this is a function of how you draw the trendlines.

Volume. This (Figure 54.2) inverted roof has upward trending volume, and that is unusual. Most of the time (65% to 70%) volume will trend downward from the start of the pattern to the day before the breakout.

Breakout direction. There is no defined breakout direction for the inverted roof, meaning the breakout can be in any direction. In fact, it's about random, with 51% favoring the upward direction.

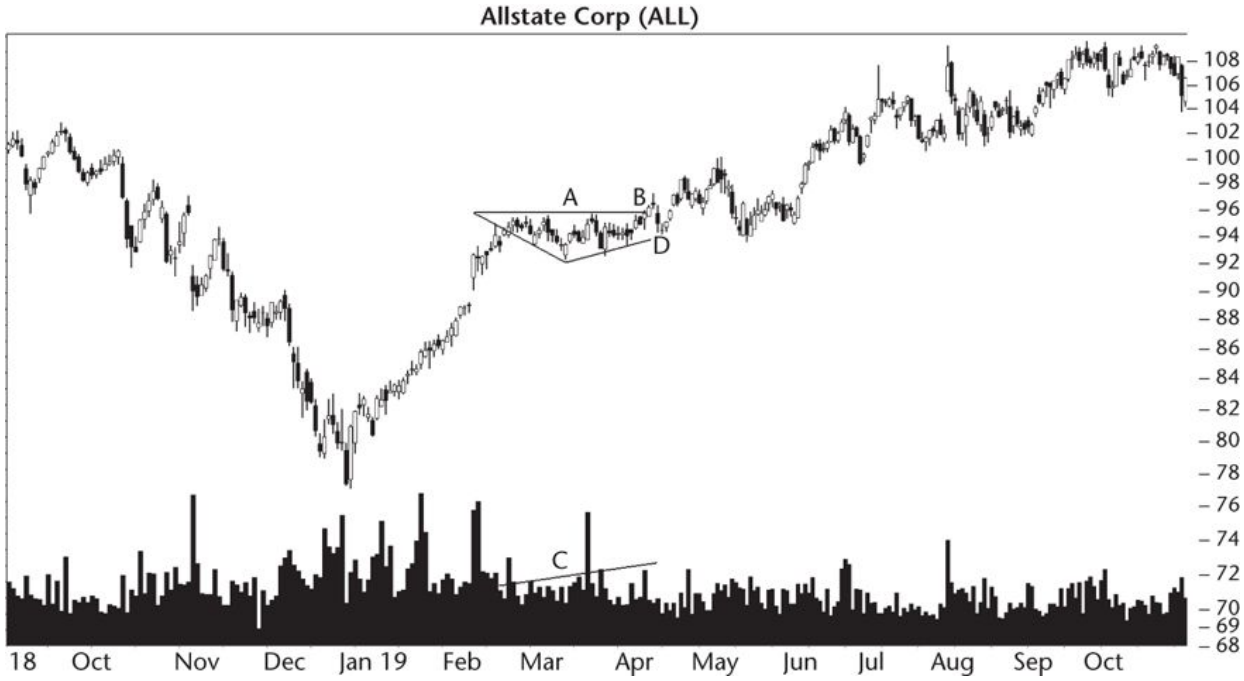


Figure 54.2 Price enters this inverted roof from the bottom and exits out the top, acting as a continuation pattern.

When price *closes* above the horizontal top or below the lower right trendline, then that's the breakout day. Figure 54.1 shows a

downward breakout (at B), and Figure 54.2 has an upward one (B).

Focus on Failures

Figure 54.3 shows an example of a failed inverted roof. The inverted roof is at A. Price trends upward going into the pattern and exits out the top at B. That means this pattern acted as a continuation of the prevailing upward price trend.

I checked the news for the move at B, and the company has this headline on their website: “Ameren Missouri to bring customers solar energy at night.” My first thought was they'd have a bunch of people holding lit candles in front of their solar panels and hope clouds wouldn't obscure the moon.

The second thought was more high tech: They'd use spotlights on the solar panels, capitalizing on the surplus generating capacity at night. Rather, this is about battery storage. I give them credit for the catchy headline.

Two days after breaking out upward at B, the stock reversed. This behavior is an example of a throwback, where price returns to (or nears) the breakout price. In this example, though, the stock continues lower, dropping all the way to C. The day after bottoming at C, the company announced the pricing of “senior notes offering due 2024.” Maybe that news sent the stock back up.

If you had bought this stock because of the upward breakout and placed a stop-loss order a penny or two below the bottom of the inverted roof, you'd have been stopped out for a loss at C. Worse, the stock would have rubbed your nose in it when price shot back up to D.

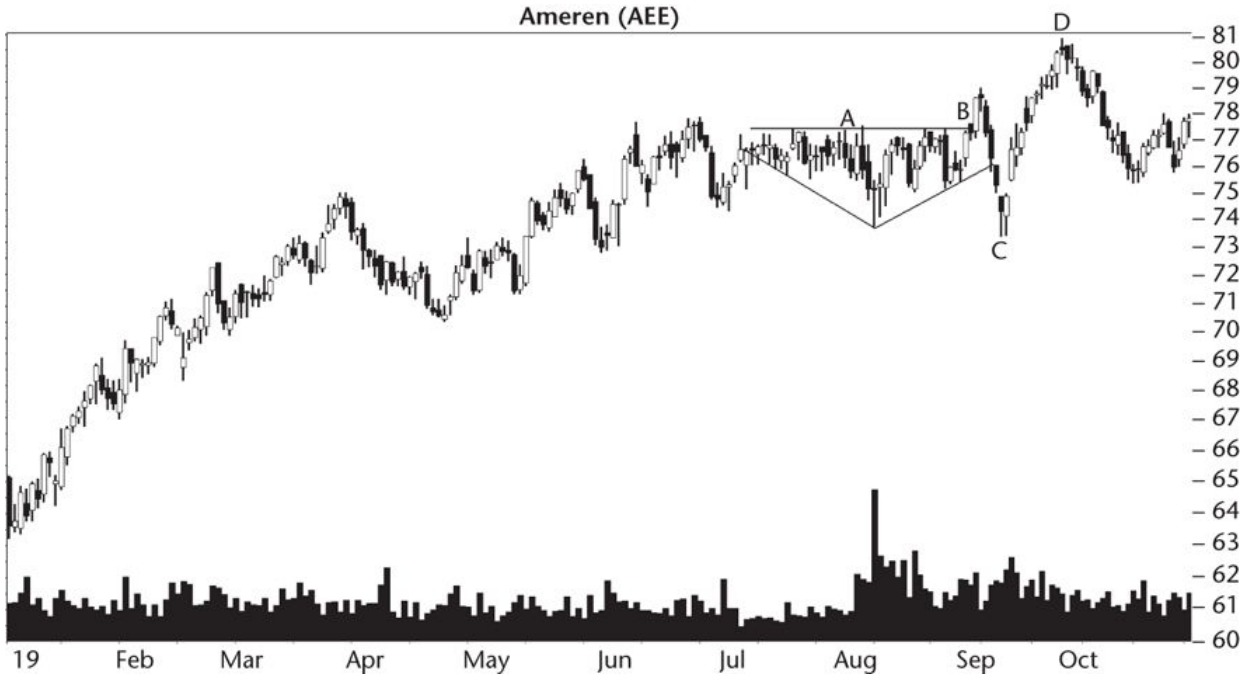


Figure 54.3 This inverted roof fails to see a sustained upward price trend.

This inverted roof is not an example of a busted pattern because price didn't *close* below the bottom of the pattern, although it was close at C. There's still time to bust it, however, because price hasn't climbed more than 10% above the top of the pattern yet. [A check of the pattern in July 2020 shows it never did bust. The closing price tied the low in early December 2019 and then soared to over 87 before Covid-19 virus fears chopped the stock down to 58 in a few weeks].

My sense of inverted roof pattern failures is that many breakouts look like this corkscrew. There is no trend direction. Price just wobbles up and down, causing traders headaches before a trend appears.

Statistics

Table 54.2 shows general statistics.

Number found. The inverted roof pattern is rare. I searched and found them in 378 stocks from July 1991 to October 2019. Not all stocks covered the entire range. There were only 59 bear market patterns, too few to be worth reporting on. They would just confuse the issue with facts.

Reversal (R), continuation (C) occurrence. Upward breakouts are most often continuations of the upward price trend. Downward breakouts frequently act as reversals.

Reversal/continuation performance. Sorting performance by reversal or continuation behavior, upward breakouts do slightly better if the pattern acts as a reversal. Downward breakouts don't show a compelling preference.

Average rise or decline. Both breakout directions show poor performance, so make sure you have a compelling reason for trading this chart pattern.

Standard & Poor's 500 change. As bad as the performance of the inverted roof is, it still beats the performance of the S&P 500 index. I used the same hold time from the breakout to the ultimate high or low of the inverted roof and measured the move for both the roof and index.

Table 54.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	242	235
Reversal (R), continuation (C) occurrence	37% R, 63% C	71% R, 29% C
Reversal, continuation performance	36% R, 33% C	–14% R, –15% C
Average rise or decline	34%	–14%
Standard & Poor's 500 change	11%	–2%
Days to ultimate high or low	220	46
How many change trend?	47%	25%

Days to ultimate high or low. Upward breakouts take an usually long time (about 7 months) to rise 34%. The drop (for downward breakouts) is twice as fast as the rise. That's the kind of velocity difference we've seen for other chart patterns, too. You can lose money faster than you can make it trading stocks.

How many change trend? As good as the 47% number appears for upward breakouts, it's below the 55% average for other chart pattern types (including this one). In other words, 47% of the patterns will see price rise more than 20% after a breakout. The higher the number the harder you should party.

Table 54.3 shows cumulative failure rates for the inverted roof. How many inverted roof patterns fail to see price rise more than 5% after the breakout? Answer: 56 or 23%. That's huge. Over a third will fail to rise more than 10%. It's even worse for downward breakouts where almost half will fail to see price drop more than 10%.

Table 54.4 shows breakout-related statistics.

Breakout direction. The inverted roof pattern doesn't show a preference for a breakout direction.

Yearly position, performance. I mapped where in the yearly price trend the breakout from an inverted roof occurred and overlaid performance.

Upward breakouts tend to do better if the breakout is within a third of the yearly low. Avoid the middle third of the yearly high–low price range for downward breakouts.

Throwbacks and pullbacks. More than half of inverted roofs show throwbacks or pullbacks. They happen quickly, within a week or so of the breakout, and price returns to the breakout price in 11 to 14 days.

Performance improves if a throwback or pullback does *not* occur. I think the reason for that is one of momentum. If a throwback does not happen, price can continue rising without anything slowing it down.

Table 54.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	56 or 23%	59 or 25%
10	32 or 36%	49 or 46%
15	27 or 48%	42 or 64%
20	15 or 54%	27 or 75%
25	9 or 57%	19 or 83%
30	13 or 63%	16 or 90%
35	10 or 67%	9 or 94%
50	27 or 78%	11 or 99%
75	27 or 89%	3 or 100%
Over 75	26 or 100%	0 or 100%

Table 54.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	51% up	49% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 39%, M 36%, H 32%	L –15%, M –12%, H –15%
Throwbacks/pullbacks occurrence	58%	64%
Average time to throwback/pullback peaks	5% in 5 days	–7% in 8 days
Average time to throwback/pullback ends	11 days	14 days
Average rise/decline for patterns with throwbacks/pullbacks	30%	–11%
Average rise/decline for patterns without throwbacks/pullbacks	39%	–19%
Percentage price resumes trend	60%	44%
Performance with breakout day gap	48%	–14%
Performance without breakout day gap	32%	–14%
Average gap size	$0.74	$0.81

The same can be said for price dropping after pullbacks. If a pullback occurs, it blunts the downward move. The energy that could have been used to power the stock into the ground begins a fight with the bulls as they push price higher during the pullback. After the pullback is over, there are fewer bears left alive to resume the push lower, so price doesn't drop as far as it would have if a pullback was absent.

Upward breakouts see price resume the breakout direction after a throwback completes, but not pullbacks. They tend to see price rise after a pullback ends (that is, 44% continue lower but 56% continue higher).

Gaps. Upward breakouts do best if a gap occurs on the breakout day. That's typical for many chart patterns. Downward breakouts show no performance difference.

Table 54.5 shows size statistics for the inverted roof.

Height. Upward breakouts show no performance difference, but the median (not shown) favors tall patterns. Downward breakouts also favor tall patterns. In most chart pattern types, a tall pattern beats a short one on average. In fact, height is often the best indicator of future performance.

Width. Patterns wider than the median 45 days outperform (upward breakouts), but downward breakouts with patterns narrower than 43 days show marginally better performance. I like to see both breakout directions agree. Maybe one direction leans democratic and the other leans republican.

Table 54.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	34%	–16%
Short pattern performance	34%	–12%
Median height as a percentage of breakout price	8.7%	9.1%
Narrow pattern performance	31%	–15%
Wide pattern performance	36%	–13%
Median width	45 days	43 days
Short and narrow performance	32%	–13%
Short and wide performance	37%	–10%
Tall and wide performance	36%	–16%
Tall and narrow performance	29%	–17%

Table 54.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	65% down	70% down
Rising volume trend performance	30%	–14%
Falling volume trend performance	36%	–14%
Heavy breakout volume performance	34%	–15%
Light breakout volume performance	33%	–13%

Height and width combinations. The table shows performance for the four combinations of height and width. If you have an upward breakout, avoid narrow patterns. Downward breakouts underperform if the pattern is short and wide.

The numbers are averages, so expect your results to vary, but my guess is if you trade inverted roofs often enough, you'll see this type of performance (unless you blow out your account, of course).

Table 54.6 shows volume statistics.

Volume trend. The majority of the time, volume trends downward. I measured this by finding the slope of the volume line using linear regression.

Rising/Falling volume. A falling volume trend suggests better performance after upward breakouts, but has no effect after downward breakouts.

Breakout day volume. The reverse is true for breakout day volume. There's no significant performance difference after upward breakouts with heavy volume, but downward breakouts do slightly better when volume is above average.

Table 54.7 shows results for upward breakouts only. That's because I haven't figured out how to tell my computer to calculate it for patterns when a breakout pierces a trendline.

I measured the *dip* on the way to the ultimate high (after the breakout) and compared those valleys to locations in the pattern. The

table gives you an idea of how often price will stop out a trade when placed at three locations.

For example, placing a stop-loss order at the top of the inverted roof will stop out a trade 72% of the time after an upward breakout. Place the stop at the bottom and you'll be protected 93% of the time (that is, the stop will hit 7% of the time).

Table 54.8 shows how this pattern has behaved over the last three decades using the magic of numbers.

Performance over time. The best performance for upward breakouts happened in the 2010s. Downward breakouts did best in the 1990s.

I still find it odd examining performance statistics for patterns that hadn't been discovered yet (recall, I discovered the inverted roof in 2005). Still, it's worth checking how they behaved back then after a diligent search for patterns in the 1990s and even the 2000s.

Failures over time. Failures are high for this pattern, as I've already discussed. Downward breakouts in the 2000s were especially brutal with 30% failing to see price drop more than 5%. I don't include bear markets in the results. My guess is that the technology tide of the late 1990s and early 2000s was strong enough to lift all boats, even those patterns with downward breakouts, making downward breakouts fail more often.

Table 54.7 How Often Stops Hit

Description	Up Breakout
Pattern high	72%
Pattern middle	25%
Pattern low	7%

Table 54.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	29%	–17%
2000s	29%	–12%
2010s	43%	–13%
Performance (above), Failures (below)		
1990s	16%	18%
2000s	26%	30%
2010s	26%	27%

Table 54.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	84 or 35%	85 or 36%
Single bust count	40 or 48%	58 or 68%
Double bust count	30 or 36%	5 or 6%
Triple+ bust count	14 or 17%	22 or 26%
Performance for all busted patterns	–11%	44%
Single busted performance	–18%	61%
Non-busted performance	–14%	34%

Table 54.9 shows busted pattern statistics.

Busted patterns count. Inverted roofs bust frequently, as if they can't make up their mind in which direction price should trend.

Busted occurrence. The table shows how often single, double, and three or more busts (triple+) occur (as a percentage of those that bust). Most of the inverted roofs will single bust, but the number seems low when compared to other chart pattern types. That's important because a single busted pattern outperforms the non-busted variety.

I like to see single busted counts of 75% or so. That way, if I decide to trade a busted pattern, I can assume it'll single bust. It might not, but that's the way to play the odds.

Busted and non-busted performance. I compared the performance of busted and non-busted patterns. If you believe an inverted roof will single bust, then buy one with a busted downward breakout. The average gain is a tasty 61%. Of course, that's for 58 single busted patterns traded perfectly, so keep that in mind. If you get in late and don't sell on time, then your wife may complain when the bills are marked past due.

Trading Tactics

Table 54.10 shows trading tactics.

Measure rule, targets. Use the measure rule to help gauge how far price may move after the pattern ends. Calculate the height of the pattern and either add it to or subtract it from the breakout price to get a target. The bottom portion of the table shows how often price reaches the target. I'll give an example in the Sample Trade on how to use the measure rule.

Table 54.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Measure the height of the pattern from the horizontal line on top to the bottom of the V. For upward breakouts, add the height to the breakout price (the top of the pattern). For downward breakouts, subtract the height from the breakout price (where price closes outside the right trendline). The result is the target price. Ignore results at or below zero. Larger percentage moves will be unlikely. The bottom portion of the table shows how often the measure rule works.
Stop location	Place a stop at the location of your choice, using the results in Table 54.7 as guidance.
Busted trade	If you find a pattern with a busted downward breakout, then consider buying the stock and riding the recovery. See Table 54.9 for help.
Quick rise, decline	If price makes a steep move leading to the start of the inverted roof and price breaks out downward, in some cases, price may return to just above the launch price. The Sample Trade discusses an example.

Description	Up Breakout	Down Breakout
Percentage reaching half height target	79%	63%
Percentage reaching full height target	65%	47%
Percentage reaching 2× height	49%	23%
Percentage reaching 3× height	37%	13%

Stop location. Use Table 54.7 to help determine where to place a stop-loss order. This is most important for swing traders or other short-term traders and less important for investors and people who buy-and-hold.

Be sure to determine if you can live with a loss given the stop location. Adjust the stop as necessary to minimize the size of a potential loss and the probability of being stopped out.

Busted trade. Busted patterns can be a profitable endeavor if traded properly. They can outperform their non-busted brothers and sisters. See Table 54.9 for guidance.

Quick rise, decline. The Sample Trade describes this scenario. It's rare that this happens, but it *does* happen. You'll see this not only in roof patterns but diamonds and other chart patterns as well.

There's an old saying that goes, “I may be paranoid, but how do you know they're not after me?” By that, I mean just because price makes a straight-line run up to a stock you own and it shows a reversal pattern is no reason to believe a straight-line run back down will follow a downward breakout. It might, but I've been burned selling too soon, anticipating an event that rarely happens.

Sample Trade

Figure 54.4 shows what a quick rise, quick decline looks like. I don't discuss a sample trade, but rather something that may happen to you.

The inverted roof is at A. Let's discuss the measure rule first. The top of the pattern is at 83.26 and the bottom is at 77.01 for a height of 6.25. The breakout price is the price at which the stock crosses the trendline boundary. In this example, that's 81.53.

If a breakout has not occurred yet, then use the top of the pattern (for an upward breakout) or guess where it might pierce the pattern for a downward breakout. Accuracy isn't important because the measure rule gives a number that will often be inaccurate anyway. However, it's worth running the calculation if only to pat me on the back for providing the statistics on how often price will reach the measure rule target.

For upward breakouts, add the height to the breakout price. In this example, that would be 6.25 + 83.26 or 89.51. That uses the full height. Table 54.10 says price will reach the target 65% of the time on average. If you want a closer target, divide the height in half and add it to the breakout price. The stock should reach the target 79% of the time, if you trade it often enough and well enough.

For downward breakouts, subtract the height from the breakout price. In this case, that's 81.53 – 6.25 or 75.28. Price will reach the target just 47% of the time. If you wish to use a different height, I show the hit rate for various multiples of height in the table.

Figure 54.4 This chart shows how a stock can return to the launch price.

Let's put Table 54.3 to use. In this example, price is breaking out downward in a bull market. The potential drop is 6.25, and at the breakout price, that's a projected decline of 8%. Let's round that up to 10%. Table 54.3 shows that 46% of the roofs will fail to see price drop more than 10%. Because we rounded up from 8%, the failure rate will be less than 46%, but wow. It's still going to be huge.

Let's return to our regularly scheduled program ...

Look at the chart again. The launch price is at B (bottom of the chart, in February). The launch price is where the straight-line uptrend leading to the inverted roof begins. It's been my experience that on the way down, price will remain slightly above the launch price (if it can get down that far). So you'll want to trade expecting the stock won't make it all the way down to the price of B.

In this example, price breaks out downward from the chart pattern at C. It drops in a straight-line run down to E where it moves sideways. Notice that the stock blew through the calculated target of 75.28 on the way down. The target is just an arbitrary number; the stock doesn't know to turn there.

If I had shorted the stock, I'd be nervous that the stock would reverse when it went horizontal. I'd be covering that short, especially when price made a strong push upward for a week prior to the breakout from the circle (peaking 3 days before candle D).

The stock broke out downward from the consolidation region at D and continued lower, bottoming well below the launch price. As I said, that's unusual both in the velocity of the decline (a straight-line run down) and how far price dropped.

Usually the decline is more sedate, with price pausing often on the way down. Many times it doesn't get close to B.

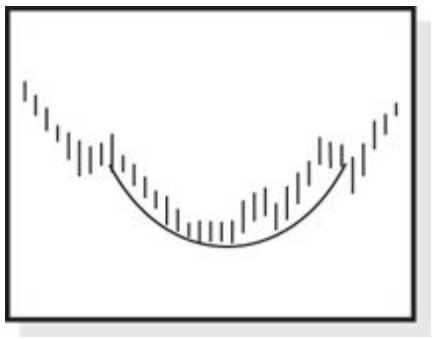
If we ignore the congestion region at E, I'd be covering my short at D (in the middle of that price bar), which is slightly above the low at B.

Why did the stock drop? Answer: Earnings were announced at C. Oh! So that's the cause!

Look at the chart one last time. This is what an earnings announcement looks like when the market *hates* the results. The market sliced 33% from the value of the stock, as measured from the close before the announcement to the June low. If you could time an entry near the June low, there was money to be made when the stock bounced going into the July earnings announcement.

This chart also shows what a dead-cat bounce event pattern looks like. I try to avoid buying a stock within 6 months of a dead-cat because of the probability of another one happening at months 3 and 6 (both announcements of earnings). Problems that often cause dead-cats take more than one or two quarters to fix.

55
Rounding Bottoms



RESULTS SNAPSHOT

Appearance: A long saucer-like concave price turn.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Intermediate-term bullish continuation
Performance rank	7 out of 39	1 (best) out of 20
Breakeven failure rate	4%	6%
Average rise	48%	37%
Volume trend	Downward	Downward
Throwbacks	64%	67%
Percentage meeting price target	65%	51%
Synonym	Rounding turns, saucers	
See also	Bump-and-run reversal bottoms; cup-with-handle; head-and-shoulders bottoms, complex; scallops (ascending and descending)	

Rounding bottoms, rounding turns, and saucers are synonyms for the same chart pattern. Rounding bottoms have a large average rise, so they perform very well. The performance rank of 1 and 7, where 1 is best, emphasizes the point. In bear markets, rounding bottoms are the best performing chart pattern.

That finding surprised me, so I added a bunch more chart patterns, and the results hardly budged. So, yes, rounding bottoms blow the doors off your Datsun (remember those?).

The rank for failure rates (not shown in the Results Snapshot) put both bull and bear markets in first and second place (respectively, with fewest failures) compared to all other chart patterns.

Because the pattern can be tall—like a bowl with high sides instead of a shallow saucer—the measure rule price target ("Percentage meeting price target" in the Results Snapshot) may be hard to reach. Just over half to two- thirds of the rounding bottoms hit their targets.

Let's take a tour of this handsome charmer.

Tour

Figure 55.1 shows an example of a rounding bottom on a daily scale. I would not call it a *good* example because the bottom is too irregular, but it's fair to say many turns look like this (or worse).

In mid-May there is an out-of-pattern downward price decline that ends with price quickly rebounding. In late June price jumps up, then fades back down. The June rise is not uncommon, so do not get too excited when it happens in a stock you own (often you see price climb rapidly just after midway along the bottom, but it settles back down in several weeks. The June rise is an example of this, but it occurs later than usual).

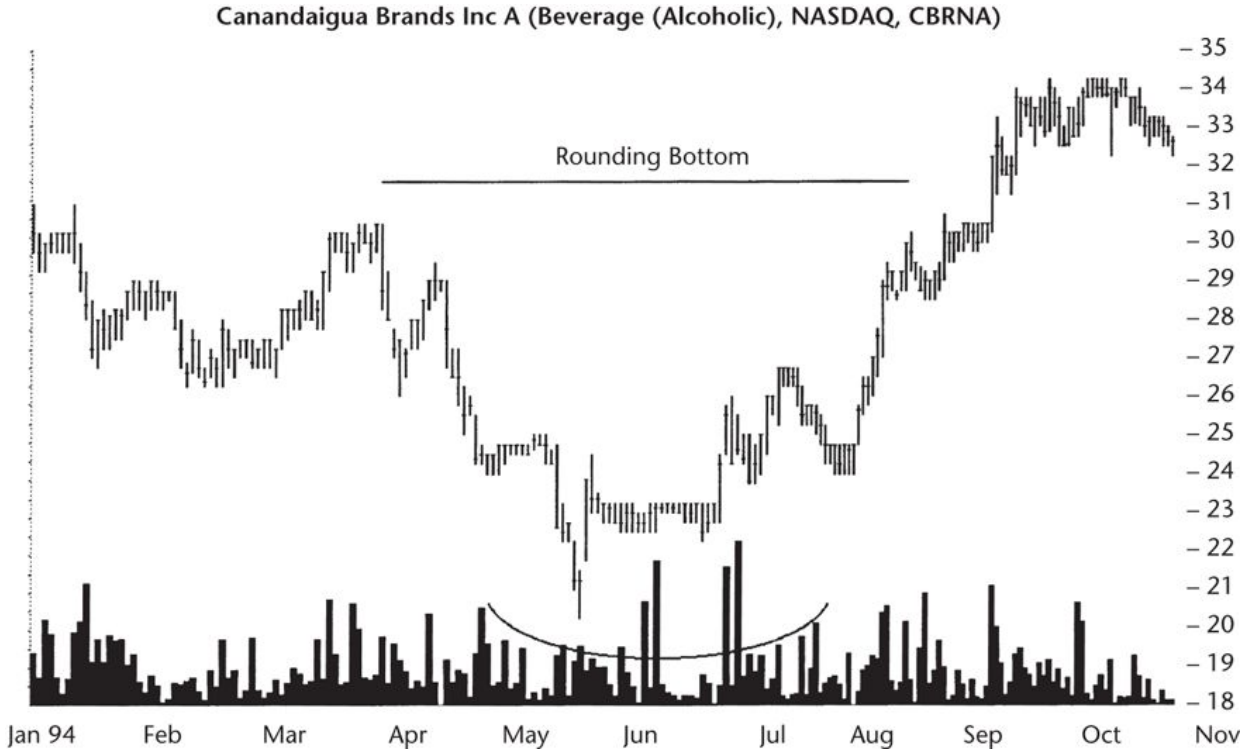


Figure 55.1 A rounding bottom on the daily scale. The bottom takes a brief dip in mid-May and a quick rise in late June.

Volume takes on the appearance of being rounded if you ignore the annoying spikes in the center.

A rounding bottom marks the imbalance between buying demand and selling pressure. Through the first part of the rounded turn, sellers have the upper hand when they drive price lower. Eventually, the

bullish and bearish forces come into balance and the stock bottoms and moves horizontally. Later still, buying demand picks up and the stock inches upward. The climb is not always a smooth one. Sometimes, buying demand sends the stock skyrocketing, but in a month or so price heads back down and planes out slightly above where it left off. Then the stock resumes its climb. When the stock reaches the old high, selling pressure usually drives price lower, forming a handle. Price recovers, breaks through the old high, and sends the stock upward.

Identification Guidelines

As chart patterns go, rounding bottoms are easy to identify. **Table 55.1** lists guidelines for their identification.

Appearance. The best looking patterns appear like bowls or saucers, a gently rounded and concave turn. In reality, though, the bottom is often irregularly shaped. The weekly scale tends to show rounded turns better than the daily charts. You might want to switch your chart to the arithmetic scale (from a log scale) and see if that makes a rounded turn appear. On the log scale, some rounded turns might look V-shaped.

Scale. Since rounding bottoms are often quite long (in this study, the longest is 4 1/2 years), I usually use the weekly scale to make identification easy. However, and this is an important point, the statistics in this chapter use daily price data even though the pattern may be years long. That's because I wanted to compare performance of these patterns with other chart pattern types on the same scale.

Table 55.1 Identification Guidelines

Characteristic	Discussion
Appearance	The price trend forms a concave bowl, usually over many months, and usually after an upward price trend. Connect the weekly low prices to visually construct a saucer or bowl shape in your mind.
Scale	Use the weekly scale to identify these behemoths, although the daily scale also works well.
Volume	The volume trend sometimes mimics the price trend by appearing as a bowl shape but more often is dome shaped.
Breakout direction, confirmation	The breakout is upward, and it occurs when price closes above the price of the *left* rim. See text. If price breaks out downward, then you don't have a rounded bottom.

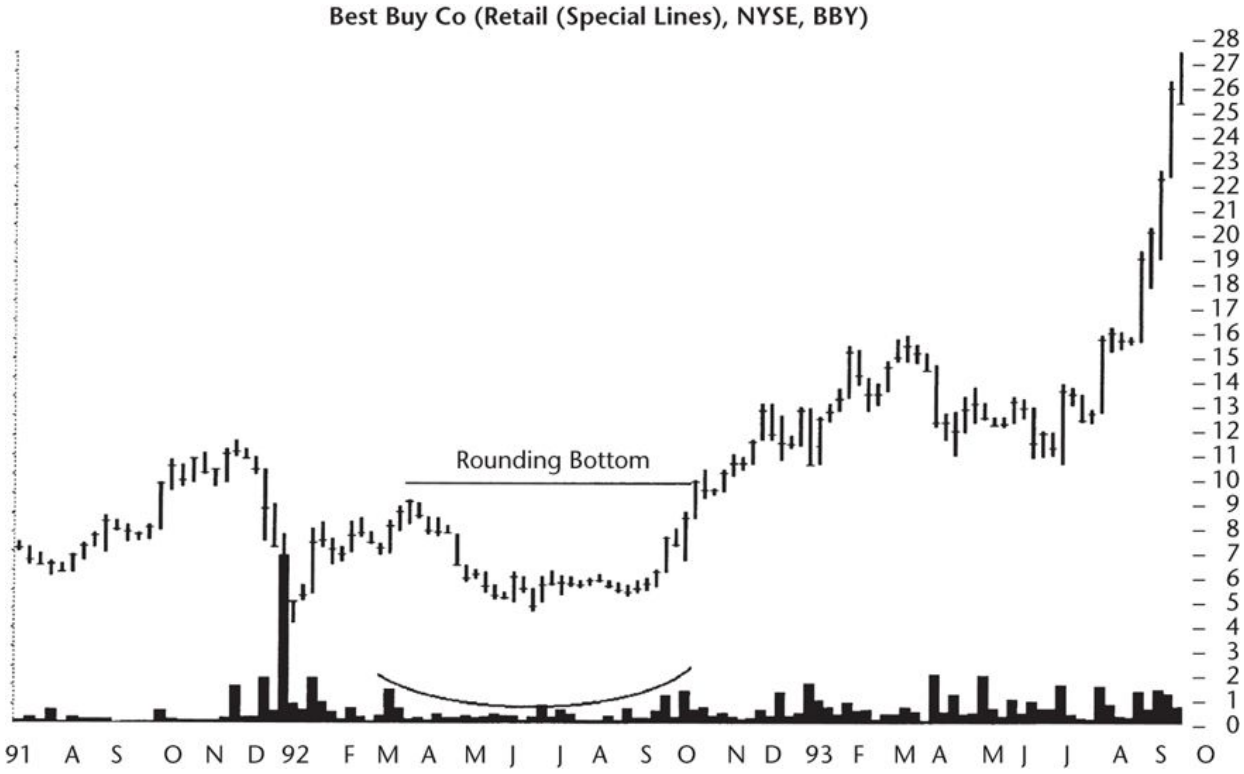


Figure 55.2 This chart is a good example of a rounding bottom on the weekly scale.

Consider **Figure 55.2**, shown on the weekly scale. The most recent up leg of the climb to the chart pattern began in late December 1991 on very high volume. Price climbed 235% in about 3 months, and then the stock eased over. The decline was not a quick straight-down affair. Rather, the stock moved lower on its way to 4.25 by curving around and flattening out.

Once price reached the low in the rounding bottom, it moved horizontally for several weeks before beginning an accelerated climb. On the right side of the pattern, price reached the level of the left saucer rim but did not pause. It kept climbing until reaching 13 and then 16 before backing down to 11 (August 1993). I consider the end of the pattern to be when the stock reaches the price level of the left side (the left lip).

A rounding bottom does not require a handle, which is a price consolidation area that commonly forms immediately after the right saucer rim, but most times you will see one. A pause in the upward move is typical behavior when price reaches an old high (the site of

the left lip). The rise falters as tepid demand or excessive selling pushes price lower; then, the two highs act as a resistance zone. Sometimes, price makes several attempts before pushing through resistance and moving higher; sometimes, price just gives up and rolls back downhill.

Volume. The volume trend occasionally echoes the price trend by rounding downward, too. You can see this in Figure 55.2, although it is not as pronounced as it sometimes is. However, a dome shape predominates (not that it matters).

Breakout direction, confirmation. The breakout is upward when price closes above the top of the left rim (if it has one). If price closes below the bottom of the chart pattern (before first closing above the left rim), then you don't have a valid rounding bottom.

If the rounding bottom doesn't have a left rim, then use a close above the right rim as the confirmation or breakout price.

Focus on Failures

Although rounding bottoms have low failure rates, they occasionally fail, and **Figure 55.3** shows an example of one. This rounding bottom (points A and B) occurs in a downward price trend, but the bottom is not as smooth (rounded looking) as I like to see. The start of the pattern, A, is not well defined because the pause lasts just a few days. The corresponding end, B, marks the beginning of a small handle attached to the rounding bottom.

Price climbs high enough to surpass peak A, staging an upward breakout (at B), but the rise soon falters. Peaks and valleys over the 7 or 8 months leading to the start of the rounding bottom presented just too much overhead resistance (shown by the horizontal line across the chart). The stock tried to pierce it but failed and dropped, eventually reaching a low of 8.56 (not shown).

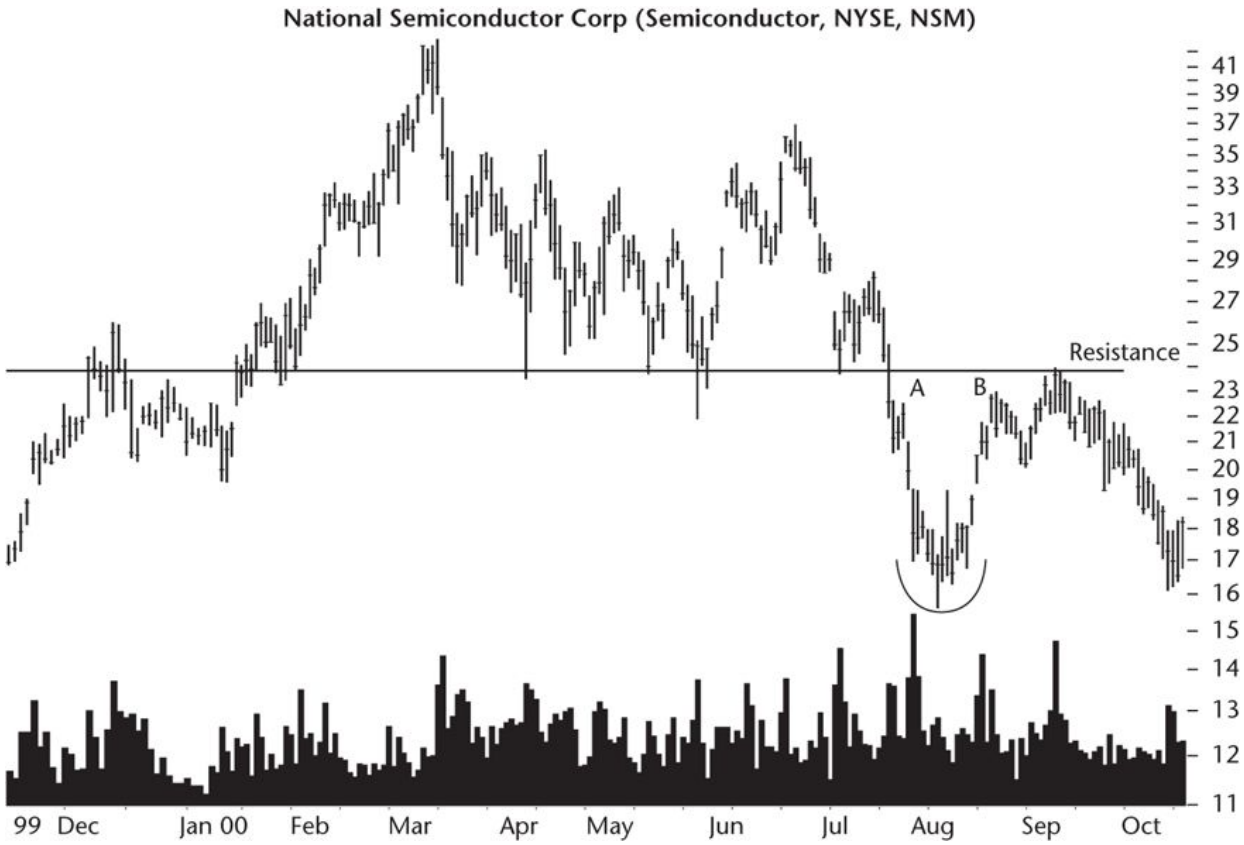


Figure 55.3 Rounding bottom that acts as a short-term reversal of the trend.

These types of situations are easy to diagnose. Before trading, always look for overhead resistance and underlying support. Knowing when price is likely to stop will give you valuable information. It may be that the trade will not be profitable enough if it hits a wall of resistance. The loss as price tumbles to the support zone may be too large to risk a trade. If the trade does not look right or if the potential reward does not compensate for the risk of loss, then look for a more promising trade. Good trades (and patterns) are worth waiting for.

Statistics

Table 55.2 shows general statistics.

Number found. I used daily price data for the rounding bottoms and found 1,206 of them in 629 stocks with the first in July 1991 and the most recent in June 2020. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. I struggled with this row and the next one. If the pattern is a bottom, then price enters the rounding bottom from the top by definition. Because price exits the pattern in an upward breakout, then all rounding bottoms act as reversals.

However, I see chart after chart where price rises into the left rim of a rounding turn. So I present a breakdown of how often price rises or drops into the rounding bottom (meaning it acts as a reversal or continuation pattern). Most rounding bottoms act as continuation patterns.

Reversal/continuation performance. In bull markets, continuations perform slightly better than reversals. In bear markets, the numbers are further apart, with the performance edge going to reversals.

Average rise. In both markets, the average rise is exceptional even though the bear market number is just 37%. That still puts it in first place for performance among all other bear market, up breakout patterns (all 20 of them).

Table 55.2 General Statistics

Description	Bull Market	Bear Market
Number found	990	216
Reversal (R), continuation (C) occurrence	33% R, 67% C	41% R, 59% C
Reversal, continuation performance	47% R, 48% C	40% R, 35% C
Average rise	48%	37%
Standard & Poor's 500 change	13%	–3%
Days to ultimate high	278	111
How many change trend?	66%	60%

Standard & Poor's 500 change. If a rising tide (general market) lifts all boats (stocks), then it helps bull market results. In bear markets, a market drop of 3% holds down the average rise for the chart pattern.

Days to ultimate high. Notice how it takes more than twice as long to reach the ultimate high in bull markets as in bear ones. If you do the math, you will find that the rise in bear markets is steeper than in bull markets. How steep? Price climbs 90% faster in bear markets than in bull markets. To check this, I borrowed a radar gun from the police.

How many change trend? This is a measure of how many rounding bottoms see price climb more than 20% after the breakout. I consider values above 50% to be terrific, so I'm happy to report that I'm, well, happy.

Table 55.3 shows failure rates. They start small but quickly climb with the bull market showing slightly better results (fewer failures). That observation is no surprise because upward breakouts in bear markets is a countertrend move, which is like swimming against the current.

Half the patterns in bull markets rise less than 35% (it's closer to 30%). That is a good showing compared to other chart pattern types. For bear markets, half the patterns rise less than 25%.

Notice how the failure rate climbs for small changes in the maximum price rise. For example, in bear markets, the failure rate more than triples to 20% from 6% for moves of 5% to 10%. The 15% maximum price rise is more than five times as high (32%) as the breakeven rate.

Suppose the measure rule predicts price will reach 22 from 20, a rise of 10%. How many rounding bottoms will fail to see more than a 10% rise? Answer: 14% in bull markets and 20% in bear markets.

Table 55.4 shows breakout-related statistics.

Breakout direction. The breakout direction, by definition, is upward. If price closes below the bottom of the pattern before closing above the top of it, then you don't have a valid rounding bottom. Instead, what you have is a mistake.

Table 55.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	43 or 4%	13 or 6%
10	99 or 14%	31 or 20%
15	111 or 26%	26 or 32%
20	81 or 34%	17 or 40%
25	71 or 41%	31 or 55%
30	79 or 49%	15 or 62%
35	65 or 55%	11 or 67%
50	129 or 68%	24 or 78%
75	140 or 83%	23 or 88%
Over 75	172 or 100%	25 or 100%

Table 55.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 39%*, M 45%, H 48%	L 22%*, M 45%, H 37%
Throwbacks occurrence	64%	67%
Average time to throwback peaks	6% in 6 days	8% in 6 days
Average time to throwback ends	12 days	12 days
Average rise for patterns with throwbacks	46%	34%
Average rise for patterns without throwbacks	51%	43%
Percentage price resumes trend	88%	74%
Performance with breakout day gap	44%	27%
Performance without breakout day gap	49%	40%
Average gap size	$0.81	$0.36

* Fewer than 30 samples.

Yearly position, performance. The sample counts are small in this one. Mapping performance onto the yearly price range, we find that the best performing rounding bottoms are those with breakouts near the yearly middle (bear markets) or high (bull markets). It suggests avoiding patterns within a third of the yearly low (but additional samples could change that assessment).

Throwbacks. Throwbacks occur slightly less often in bull market rounding bottoms (64%) than in many other chart patterns (66%). That may be due to the excellent performance shown by the pattern (but if that were true, you'd see bear market patterns also suffering, and we don't).

Price takes the usual amount of time to return to the breakout price (12 days). When throwbacks do occur, performance suffers. After a

throwback completes, price resumes its rise more than 74% of the time on average, which is a terrific number.

Gaps. Breakout day gaps hurt performance, which goes against trading lore. Often you will see a gap lead to better performance but not for rounding bottoms. This doesn't appear to be a sample size issue, though. It is what it is.

Table 55.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones, but only in bull markets (giving patterns a 12 percentage point boost). I used the median pattern height—from highest high to lowest low—divided by the breakout price as the benchmark. I show the median in the table for your viewing pleasure.

Table 55.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	54%	36%
Short pattern performance	42%	39%
Median height as a percentage of breakout price	21.9%	25.2%
Narrow pattern performance	44%	38%
Wide pattern performance	52%	36%
Median width	174 days	95 days
Short and narrow performance	40%	42%
Short and wide performance	48%	32%
Tall and wide performance	53%	38%
Tall and narrow performance	55%	29%

Table 55.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	64% down	53% down
Rising volume trend performance	48%	47%
Falling volume trend performance	48%	28%
Heavy breakout volume performance	48%	35%
Light breakout volume performance	46%	45%

Width. Wide patterns performed better than narrow ones but only in bull markets, with the best performance coming from rounding bottoms in bull markets. I used the median length as the separator between wide and narrow.

Notice that rounding bottoms in bull markets are almost twice as wide as those in bear markets. It might have something to do with eating too many potato chips.

Height and width combinations. The performance of rounding bottoms tracks the individual performance. For example, in bull markets we know that tall patterns outperform, and we see that wide patterns do well, too, so the combination of tall and wide also leads to the best performing combination. In bear markets, the best performing combination is short and narrow (which happens to be the worst performing bull market combination).

Table 55.6 shows volume-related statistics.

Volume trend. Both markets see volume trending lower most often, as found by using linear regression on volume.

Table 55.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	93%	91%
Middle	12%	13%
Pattern bottom	1%	2%

Table 55.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	54%
2000s	59%
2010s	42%
Performance (above), Failures (below)	
1990s	3%
2000s	4%
2010s	5%

Rising/Falling volume. Bear market results favor a rising volume trend, but bull markets have no preference.

Breakout day volume. When breakout volume was below the 30-day average in bear markets, rounding bottoms outperformed. The bull market shows patterns with heavy breakout volume doing slightly better.

Table 55.7 shows how often price reaches a stop location. Because rounding bottoms are so tall, it will be rare that a stop-loss order placed at the bottom or even halfway down the pattern will be hit.

If you choose to use either of those locations (middle or bottom) for stop placement, then convert the potential loss into a percentage of the current price. If the result is large, then consider moving the stop. Normally I'd tell you to look for a more promising trade, but rounding bottoms have superb performance. You might try a volatility stop instead. See the Glossary for details.

Table 55.8 shows performance over time. I'll admit that I was curious to see if performance of this pattern would sustain itself over the decades. Incidentally, the 2000s had the only bear markets (two of them), so I don't include the statistics for them.

Performance over time. The 2010s show performance dwindling compared to the other two decades.

Failures over time. Failures have been creeping up over the last 30 years, but they still remain low. In this case, I'm looking at 5%

failures, which is to say, I counted how many patterns failed to see price rise more than 5% after the breakout.

Table 55.9 (busted patterns) had too few samples to show these tables.

Trading Tactics

Table 55.10 shows trading tactics.

Measure rule, targets. The measure rule helps estimate the potential profit. To apply the measure rule and help you visualize its use, consider the chart shown in Figure 55.4.

Subtract the lowest low in the rounding bottom from the right saucer rim. In the figure, the low is 25 and the right saucer rim is (arguably) 31.44 (point B), giving a formation height of 6.44. Add the height to the value of the right saucer rim to get the target price. In this case, the target is 37.88 and price reached that level in late January.

If you consider the right rim as the peak in November (at 35), then the target would be higher, (35 – 25) + 35 or 45. If the right rim is missing, then don't bother looking for it. Just use the price of the left rim.

The bottom portion of the table shows how often the measure rule works. We used the full height in the example, and in bull markets, price reaches the target 65% of the time on average. If you cut the height in half, you can increase the chance of price reaching the closer target.

Table 55.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Subtract the lowest low in the rounding bottom from the right saucer rim (or use the left rim if someone stole the right one). Add the difference to the value of the right saucer rim to get the target price. The bottom portion of the table shows how often this works.
Buy bottom	If you can determine that a rounding turn is happening, buy near the bottom and consider selling when the right rim forms.
Wait for breakout	Wait for price to rise (close) above the left saucer rim before buying. If the rounding bottom does not have a left rim, then use the right one, or use whichever one is lower.
Watch for handle	Many times price will reach the level of the left saucer rim and then dip to form a handle (leaving behind a right rim). Buy when price closes above the left/right rim (or pierces a handle trendline moving up).

Description	Bull Market	Bear Market
Percentage reaching half height target	84%	73%
Percentage reaching full height target	65%	51%
Percentage reaching 2× height	39%	24%
Percentage reaching 3× height	25%	12%

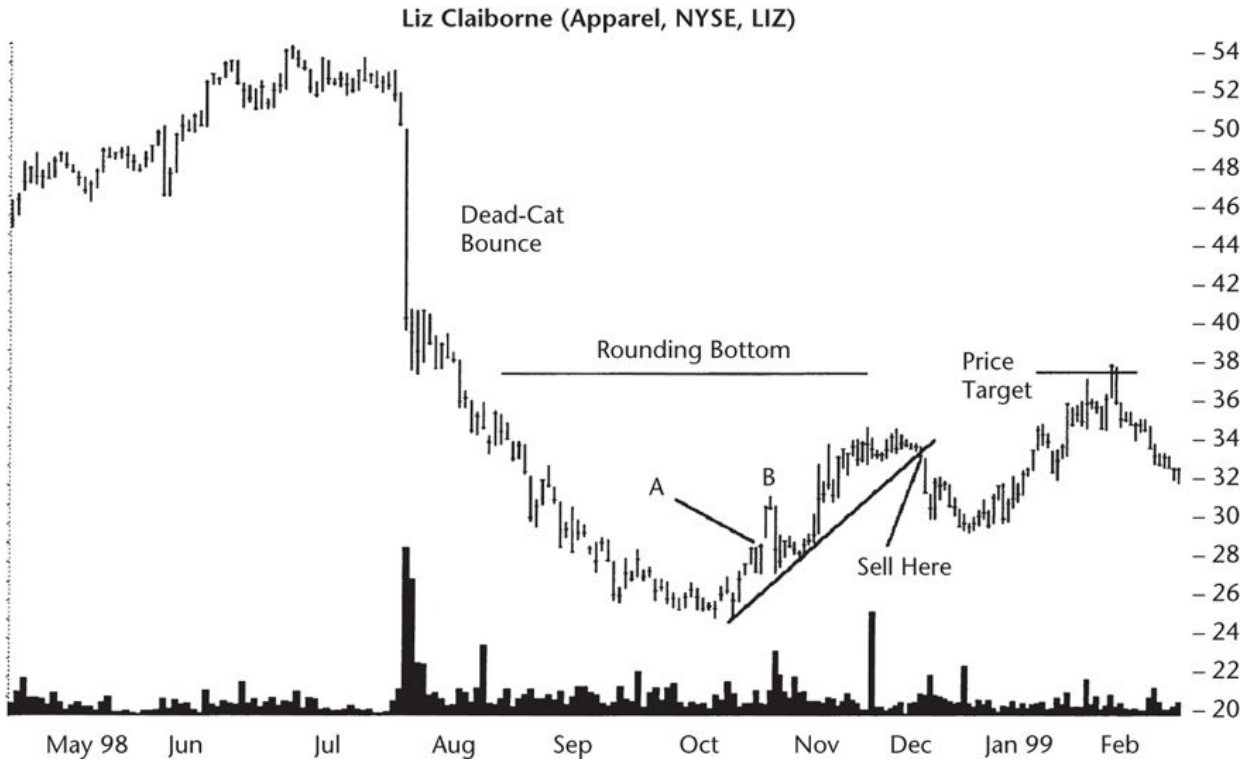


Figure 55.4 A treacherous example of a rounding bottom that has no left rim. The rounding turn forms after disappointing earnings sends the stock into a dead-cat bounce.

Table 55.3 gives an example of how that table is useful when combined with the measure rule, so flip back to that discussion when you have time.

Buy bottom. In my trade review (see Experience), I have bought rounding bottoms as they make the turn at the bottom. If price closes below the bottom of the chart pattern, then it's best to close out the trade. If price rises, then you can sell at the right rim or even hold on for an upward breakout and ride price higher.

Wait for breakout, watch for handle. I consider rounding bottoms to be one of the more treacherous chart patterns. Take another look at Figure 55.4. In judging when the breakout occurs, you can use either the left or right saucer rim (in theory). Use whichever one gets you in soonest.

Unfortunately, this rounding bottom has no left rim and the right rim could be either B or the peak in November. How do you determine a breakout?

That is the situation I faced. I learned that in such circumstances I needed to wait for the handle to form and price to climb above the handle high (or right cup rim). When it did (point A), or so I thought, I paper traded the stock and bought in just as it crested (point B). That turned out to be a minor high. Price dropped the next day and then slowly recovered, making another handle. A good place to sell is when price pierced the up trendline in early December, heading down.

Experience

One of the harder things to do is determine where the left rim is. If price is trending down, you'll see a lot of minor highs as price drops in a drop-retrace-drop pattern. Thus, when the stock starts to recover after building a bottom, which minor high on the left do you match to help predict the appearance of the right rim?

Hudson Global

Figure 55.5 shows an example of this in Hudson Global (HSON). The rounded bottom appears from A to G, or does it? What about a lower turn, say, B to F, C to F, or even D to E? All of those labels look like valid rounding bottoms, but shorter than the AG pattern.

Why is the left rim important? Because the right rim often forms *near* the price level of the left rim. If you know where the price is likely to turn and form a handle, you can trade the rounding bottom from the turn near the bottom to the right rim. You'll know how much you are likely to make.

For the record, because I require an upward breakout from a rounding bottom, the AG pattern is *not* a rounding bottom (because it breaks out downward when it fails to close above A).

For the first buy (8 April 2008), I mistakenly had two buy orders outstanding and they both filled in the handle of the rounding bottom (CF). I placed a stop order with my broker and raised it as price climbed.

I placed a third buy order at 9.57, and on 1 May, the stop filled. I raised the stop and included the new shares.

As price climbed, I continued to raise my stop. On 19 May, I wrote that I was worried about price reversing, so I tightened the stop twice in the next two days, eventually taking me out of the trade on 22 May. “Sell reason: My stop hit, just as I expected even though price closed higher. I tightened the stop because of the big 5+% decline yesterday for unexplained reasons (the market was also down big). Looks like I sold at the low for the day. I wanted to protect my profits.”

Figure 55.5 Sometimes it can be difficult to find the left rim of a rounded turn. The left rim can help determine where the right rim might appear.

On the three trades, I made 31%, 23%, and 15%.

I was fortunate enough to sell when I did because the 2007 to 2009 bear market took the stock down to 68 cents, well below the sale price of $11.

- Lesson: If a stock has multiple left rims, consider trading the lowest pair (left and right rims).

Encore Wire

Encore Wire (WIRE) was an unusual trade. The stock dropped in 2007 and bottomed in 2008, forming a nice rounded turn. I bought near the bottom just after the stock started moving up (which is a setup I've used several times).

The turn was a fakeout that sometimes happens near the middle of the rounding turn. The stock retraced the move, it bottomed again, and then climbed from there. I held on during the move despite tired fingers.

In late April, the company announced better than expected earnings and the stock gapped up (breakaway gap) by more than 20%. I sold that day to capture the gain.

Over the next two weeks, the stock continued higher, eventually peaking at just over 25 before dropping 47%. I sold at 22 for a gain of 24% with a hold time of about 2 months, and yet I predicted, correctly, that the stock would climb to 24.50, which it did.

- Lesson: If a company announces better than expected earnings in a stock you own (and price shoots up 5% or more), consider selling and buying back in after the retrace.
- Lesson: If you can correctly identify a rounding bottom, buy near the bottom and ride price up to the right rim (or higher). Place a stop below the pattern just in case.

Ferro

With Ferro (FOE), I bought in 2012 near the bottom of what I believed was a rounding bottom, hoping to ride the stock back up. Instead, the bottom fell out of the rounding turn and the stock dropped in half.

My mind was focused on the stock returning to the base of a long cloud bank at 18 to 20. You can see it on the monthly charts going back to 1992. The bear market of 2007 to 2009 took the stock down from a high of 24 to 81 cents. It bounced back to 18, the cloud base, before plummeting again, reaching a low of 2.38. It was during this second drop when I bought.

The stock began another recovery that took it back up to 15. In late 2013, the stock moved sideways for more than a year. When it showed weakness in early 2015, I got tired of waiting for the upward move to resume and sold it for a 133% gain. I was hoping for more, a return to the cloudbank at 18 to 20, but it never made it (meaning the stock found the ultimate high at 15 and change before dropping by 27%).

- Lesson: Even though I doubled my money, when price closed below the bottom of the rounding turn, I should have sold and taken a small loss.

Millennium Pharmaceuticals

I bought Millennium Pharmaceuticals (MLNM) in May 2005 in the handle of a rounded turn (which now looks like a descending scallop). I bought before confirmation, and the stock burned me. Price dropped, and I sold on the way down, taking a loss on the trade. The same thing happened on Stein Mart (SMRT) where I took a small loss.

- Lesson: If you're thinking of buying during creation of the handle, wait for confirmation (price to close above the right rim) before buying.

Sample Trade

How do you use the trading tactics to improve your investment performance? Consider what Glen did with the situation shown in **Figure 55.6**, on the weekly scale. His dream was to become a day trader, but he had neither the trading capital nor the necessary experience for the job. He decided to get there one trade at a time, using the longer time scales and working down to day trading.

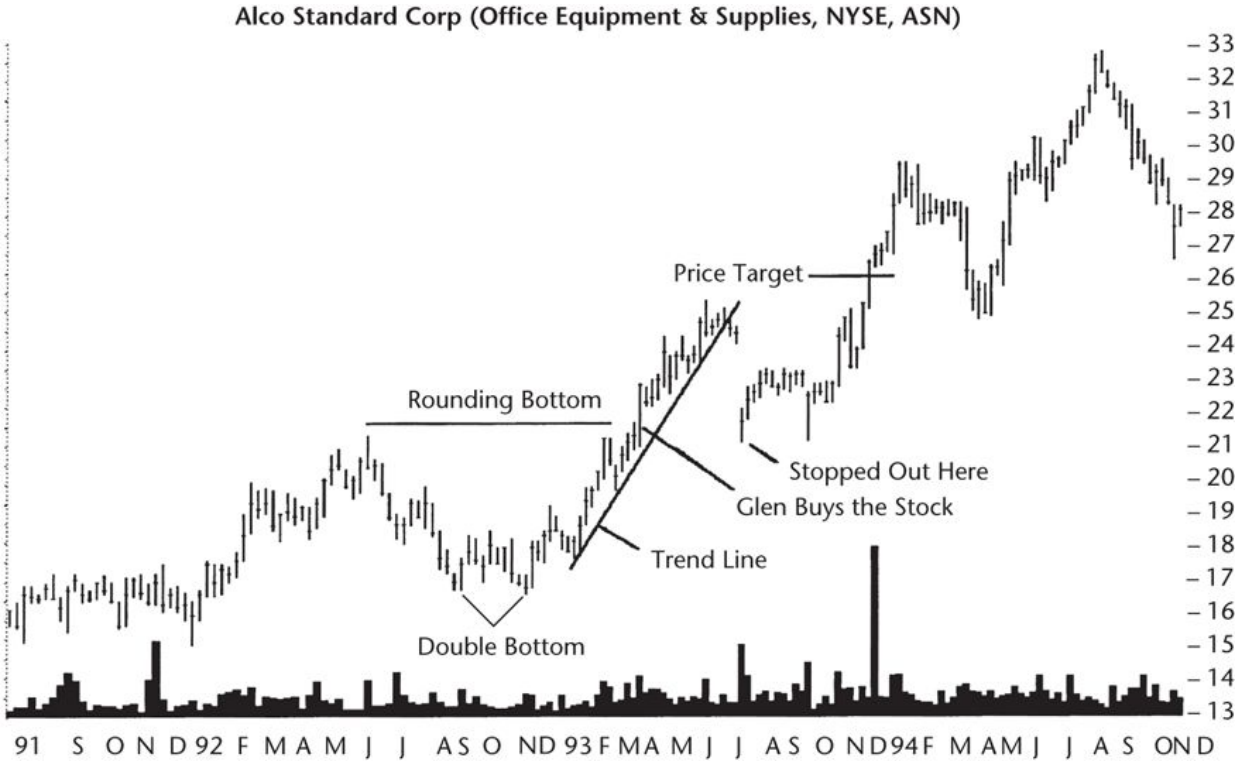


Figure 55.6 The double bottom pattern is barely discernible within the rounding bottom on the weekly scale.

In December, as he was flipping through his charts, he came across what appeared to be a mild double bottom. On the daily chart the two bottoms in August and November 1992 were barely discernible (remember, this is the weekly scale). Was it a valid chart pattern, and should he buy the stock now?

"The retrace between the two bottoms was not high enough and the two bottoms were not clear enough to be worth considering," he told me. He justified his action by thinking that if he was having a hard time spotting the chart pattern, then others would have the same

trouble. If no one spots the chart pattern, then price may not rise or behave like he expected.

When he flipped to the weekly chart, it changed the characterization of what he was seeing. On his screen was an obvious rounding bottom. The volume pattern supported the conclusion: receding as price declined and rounding up as price rose. So, he decided to wait for the rounding bottom to stop near the left rim at about 21.38.

When it paused for 2 weeks in February, he knew the stock was primed. The question then became, what was it going to do next? The only way to find that out was to wait.

The following week price dropped. “I waited until price closed above the right rim. I knew that to buy earlier would risk a reversal and the stock might not recover for a long time. If the stock moved above the right rim, then the probabilities suggested a continued rise.”

When price hit 22, he bought. He looked back at his chart and decided to put a stop-loss order 15 cents below the saucer rim, just below a support level. He decided that if the stock hit his stop, in all likelihood it was going down.

Satisfied with his investment decision and trading plan, he was confident that his career change to day trading was a simple step away. “I was even more confident as the stock climbed. Overconfident. Don't laugh, but I started looking through brochures from several companies that offered seminars on day trading. I thought I'd turn pro.”

The stock declined and closed below the up trendline for two days. “It was a warning sign anyone could have missed. The following week, my world ended.”

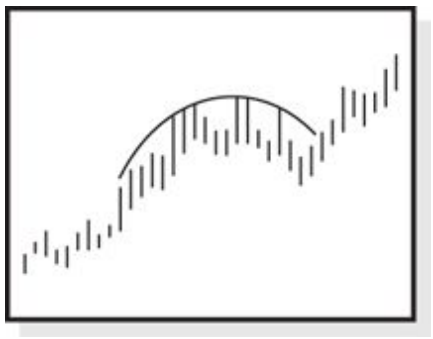
He received a call from his broker saying price had hit his stop-loss order. “I was upset. I threw things and booked a loss of about a buck a share.”

As he watched the stock, he became even more upset. He sold at the low for the week.

Three years later, after day trading was over for the day, Glen happened to review this trade. He decided to pull up the chart and

gasped at what he found. The stock peaked at 66, exactly triple his purchase price.

56
Rounding Tops



RESULTS SNAPSHOT

Appearance: As price moves up, it forms a convex curve.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Short-term bullish reversal
Performance rank	2 out of 39	19 out of 20
Breakeven failure rate	9%	17%
Average rise	55%	23%
Volume trend	Downward	Downward
Throwbacks	63%	64%
Percentage meeting price target	58%	34%
Synonyms	Domes, rounding turns	
See also	Bump-and-run reversal tops; head-and-shoulders tops, complex; scallops, ascending and inverted; scallops, descending and inverted	

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Performance rank	3 out of 36	16 out of 19
Breakeven failure rate	20%	12%
Average drop	17%	21%
Volume trend	Upward	Upward
Pullbacks	58%	62%
Percentage meeting price target	14%	12%

When is a top not a top? When it is a rounding top and price breaks out upward 58% of the time in bull markets.

The Results Snapshot shows the performance results that range from second and third to (almost) worst. In bull markets, rounding tops place second with average gains of 55%. Contrast that with bear markets where the average rise is 23% and performance ranks almost last: 19 out of 20 (where 1 is best).

I was wondering if I was dreaming these results. How can they be so good and so bad? Maybe the answer is low sample counts, so I scanned more data and doubled the number of samples. The results changed but only by tiny amounts (which is reassuring, really).

Because these patterns are often tall, the measure rule (“percentage meeting price target”) suffers, with the best result coming in at 58% and the worst at 12%. That's using the pattern's full height to predict a target. I'll talk about the measure rule later in Trading Tactics.

Let's take a tour of the pattern.

Tour

Figure 56.1 shows an example of a rounding turn on the daily scale. Notice how the starting (A) and ending (B) points are nearly the same price. This characteristic differentiates the pattern from an inverted scallop, either ascending or descending. A single bump also separates it from a complex head-and-shoulders top, although I did not remove any rounding turns that were part of a head-and-shoulders pattern.

In this example, the turn is gentle but still has irregular price moves poking through (points C and D). Volume trends upward in this case, and that is unusual for rounding turns (but the volume trend is close to random anyway).

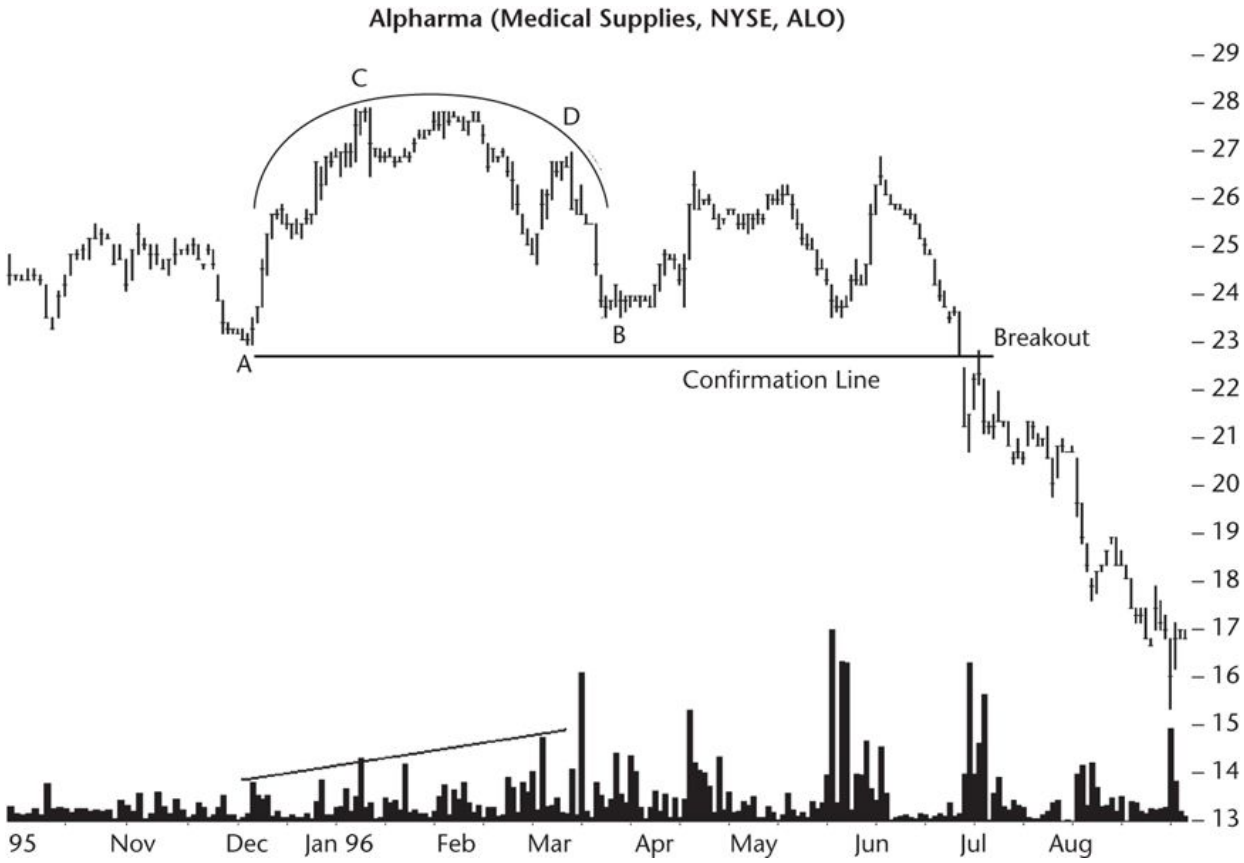


Figure 56.1 A rounding turn begins at point A and rounds over to end near the price of where it begins (B). Points C and D make the curve look irregular, but they occur often in rounding turns. Volume usually trends downward, unlike this example.

The reason a rounding turn occurs is not difficult to explain. Price moves up on bullish enthusiasm confirmed by high volume at the start. Knowing that price is climbing, sellers hold onto their shares a bit longer, forcing demand to climb along with share price. However, as price rises, buying demand tapers off and eventually catches up with supply. Price rounds over at the top. Since the shares are fetching a premium to intrinsic value, more sellers appear. The smart money starts selling, too, and price drops.

Once investors discover the upward price momentum has turned, selling pressure increases, forcing price down. Volume may pick up as more traders try to dump their shares as price declines. Eventually, the decline ends when nervous novices toss in the towel and sell their holdings. When all those who considered selling their shares have sold, the smart money jumps in and buys the stock, or sells it short, eventually pushing the stock to new highs (upward breakouts) or new lows (downward breakouts).

Identification Guidelines

Table 56.1 lists identification guidelines.

Table 56.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for price to rise into a curving turn (convex), forming an inverted bowl or saucer.
Daily or weekly scale	Rounding tops are often long enough to appear on the weekly charts as well as the dailies.
Even end price	The price at the start of the pattern is close to the end of the pattern. Don't use this as a hard rule to exclude rounded turns with uneven bottoms. Think of this as guidance to avoid scallop-shaped patterns which tend to be narrower than rounded turns.
Volume	Volume is occasionally higher on either end and shallower in the center.
Breakout direction	A close above the highest high in the pattern signals an upward breakout; a close below the lowest rim signals a downward breakout.

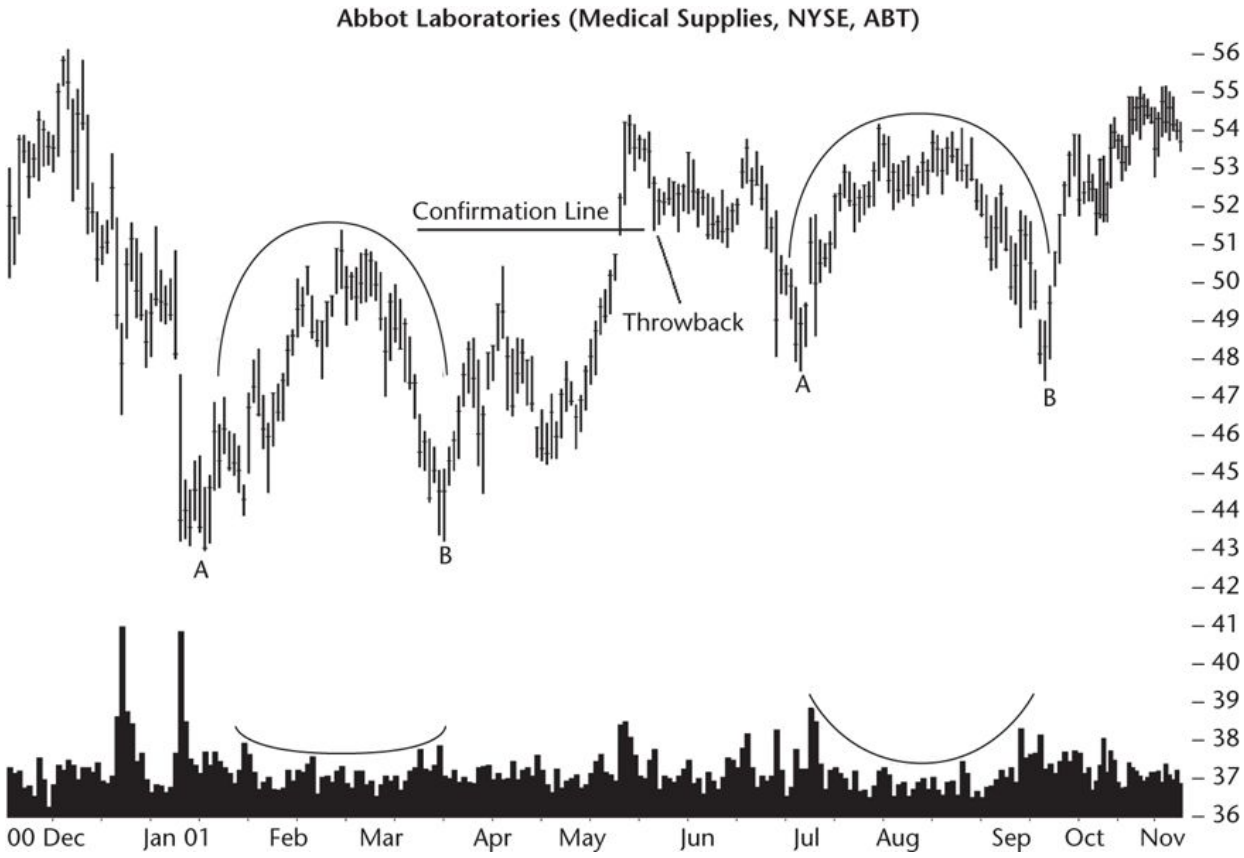


Figure 56.2 Two rounding turns with the ends nearly at the same price. Both have U-shaped volume and upward breakouts.

Appearance. Figure 56.2 shows a good example of a rounded top in the pattern on the right of the chart, from July to September. Price rises from point A (in both patterns) and rounds over at the top of the pattern. Price heads down and retraces much of the prior rise, leaving behind a dome or inverted bowl on the chart.

Daily or weekly scale. Rounded turns are often wide and tall enough to appear on either the daily or weekly charts.

Even end price. Look for the ends of the rounding turn to bottom near the same price. In the patterns I looked at, the bottom-to-bottom price variation averaged 4%, with a median of 2%. What you want to avoid is selecting patterns that are really inverted scallops. Those have starting or ending prices well away from the other rim. However, if price forms a nice and *wide* dome shape with uneven bottoms, that's fine. The preference is to have the two valleys bottom near the same price.

Volume. Volume is often lowest at the center of the turn and higher at either end. This observation is just a guideline, not an inviolable rule. Many times you will see an irregular volume trend over the life of the chart pattern. Pay it no heed; it is still a rounding top. What is important is that price rounds over and a bowl-shaped volume trend just adds evidence to the veracity of the chart pattern.

Breakout direction. The breakout can be in either direction. An upward breakout occurs when price closes above the pattern's high. A downward breakout happens when price closes below the lower of the two rims.

Figure 56.2 shows two examples of rounding turns on the daily scale. Notice the gentle curve with the August pattern appearing more rounded. The February pattern looks like someone squeezed it in a vice—an inverted V shape.

The start and end of each pattern is at nearly the same price. That characteristic differentiates rounding turns from scallops. The rounding turn may be part of a complex head-and-shoulders pattern, so check for that, and if so, trade it as a complex head-and-shoulders pattern.

Both rounded tops (in the figure) break out upward when price closes above the highest high in the pattern. For downward breakouts, price must close below point B.

Focus on Failures

Figure 56.3 shows a typical example of a failure when price fails to rise more than 5% after the breakout. The chart pattern obeys the identification guidelines because the turn appears rounded with price at A and B (the pattern's start and end) nearly the same.

Buying demand and selling pressure determines stock price movement. Fundamentals drive those forces. If news comes out that a company is considering bankruptcy, you can be sure the stock price is going down. Most news influences price less.

For example, beginning in late January 2002, natural gas prices started rising and broke out upward from a symmetrical triangle in March, just as the stock made a minor high. Gas prices peaked in May and started a long slide that ended in August. By contrast, the stock peaked in March 2002 and continued lower. Even as natural gas prices were making new highs, the stock was tumbling—“diverging” as we call it. However, both the stock and natural gas bottomed within a few weeks of each other, with the stock leading the way higher.

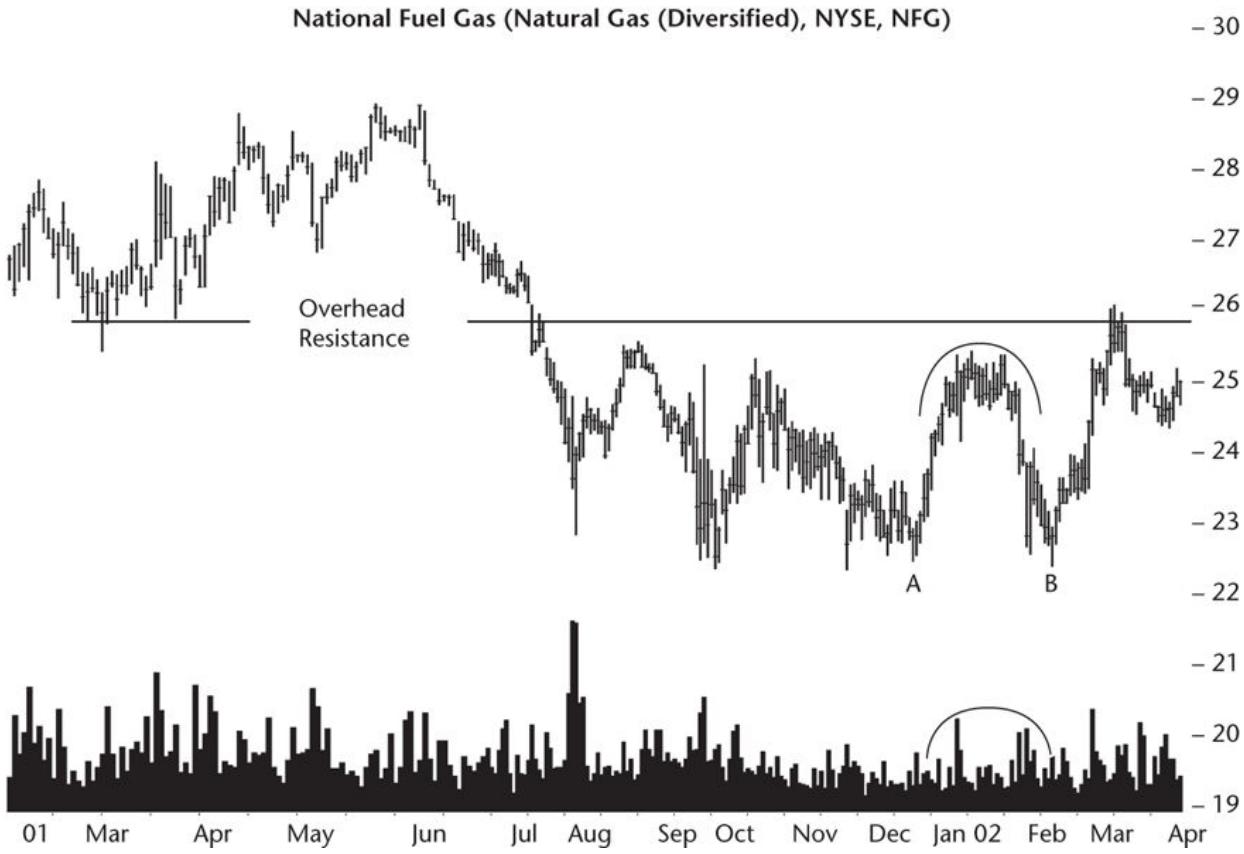


Figure 56.3 Overhead resistance blocks this rounding turn's upward breakout.

Technical factors also influence price movement and contribute to pattern failure. For example, if you know that Joe Trader is buying and his record is the envy of the industry, you may want to buy, too. This herd instinct is what momentum is all about. Another example: Mutual funds may spread their trades over several days to try to keep their elephant-like movements secret. If you learn of a mutual fund selling a large block of shares of a stock you own, you may wonder, what do they know that I don't? You may decide to dump your holdings too. This selling pressure contributes to downward momentum.

Returning to the figure, the stock stages an upward breakout in March 2002, but bumps against overhead resistance. I only show the end of the resistance zone that dates back to December 1997, about 5 years before the pattern appeared. You can see how price tried in August, September, and again in October to push through the ceiling. In early March 2002, it succeeded in making a new high, but the rise

soon faltered, predicting a tumble in natural gas prices. Not shown, but in late July the stock dropped to 15.61, a multiyear low.

Many times the reason price changes trend is not as clear as in this example (overhead resistance and diverging gas prices). However, by digging into the fundamentals and with knowledge of the technicals—spiced with experience—you will be surprised at how often you can call the turns.

Statistics

Table 56.2 shows general statistics.

Number found. I uncovered 1,434 rounding tops in 651 stocks with the first found in July 1991 and the most recent February 2020. Not all stocks covered the entire period, and some stocks no longer trade.

Reversal (R), continuation (C) occurrence. The trend followers (bull market/up breakout and bear market/down breakout) show continuation patterns happening most often. Countertrend patterns prefer reversals.

Notice how the widest spread between the appearance of reversals and continuations follows the market trend. In other words, the two columns bull market/up breakout and bear market/down breakout have continuations appearing far more often than reversals. The countertrend columns, the two inner ones, show smaller differences.

Reversal/continuation performance. Upward breakouts show patterns acting as reversals outperforming continuations. Downward breakouts show the reverse with continuations performing better.

If you want to use this finding, then look at the inbound price trend (the price trend leading to the pattern's start). If it's above the top of the chart pattern, then the price trend is downward. If price breaks out upward, then you're looking at a reversal of the downward inbound trend. A downward breakout would be a continuation of the downtrend.

Table 56.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	552	197	399	286
Reversal (R), continuation (C) occurrence	35% R, 65% C	55% R, 45% C	53% R, 47% C	34% R, 66% C
Reversal, continuation performance	61% R, 51% C	27% R, 19% C	–16% R, –19% C	–17% R, –22% C
Average rise or decline	55%	23%	–17%	–21%
Standard & Poor's 500 change	14%	–2%	–4%	–8%
Days to ultimate high or low	288	83	47	27
How many change trend?	65%	38%	35%	42%

Apply the same logic to a rounding top in a rising price trend. Upward breakouts act as continuations of the uptrend and downward breakouts act as reversals.

Average rise or decline. As one might expect, the average rise in bull markets is the best performing column of the four. The numbers suggest you will want to trade this pattern with the market trend: upward in bull markets and downward in bear markets. Countertrend moves show weaker results.

Standard & Poor's 500 change. I found the results shown in the table by using the dates of the breakout to ultimate high or low of the rounding top and applied that to the S&P. You might say that the index helped or hurt the performance of the rounding top, depending on the breakout direction. I know from analysis of my own trades that

the market trend helps when the market moves in the same direction as the stock (if I buy, I hope the market rises, too) and it hurts performance when the market goes against the stock.

Days to ultimate high or low. The rise in bull markets (55% in 288 days) takes longer to reach the ultimate high than the decline in bear markets (21% in 27 days) takes to reach the ultimate low. The decline must be steeper than the rise. Indeed, the speed of the bear market decline is not one and not two but 4.1 times as fast as the rise in bull markets. If the bear market were a vacuum cleaner, you could say it really sucks (price lower).

How many change trend? This is a measure of many rounding tops seeing price move more than 20% after the breakout. I consider values above 50% for upward breakouts to be wonderful. For downward breakouts, the average is a more modest 28% in bull markets and 49% in bear markets. In other words, the bull market numbers are better than average, but the bear market numbers fall short.

What all of this means is that the higher the number shown in the table, the better your chance of making money.

Table 56.3 shows failure rates. The lowest failure rates associate with the market trend: trading long in bull markets and short in bear markets. Countertrend trades have more risk.

For example, 18% of rounding tops in bull markets with upward breakouts fail to see price rise more than 10%, but in bear markets, 37% fail to see price rise as far. Half of the patterns (53%) in bull markets fail to see price rise more than 35% compared to a failure rate of 79% for bear markets with upward breakouts.

You can see how the failure rates start low and climb quickly for small changes in the maximum price rise or decline. For example, rounding tops in bear markets with downward breakouts show failures of 12%, 28%, and 44% for declines of 5%, 10%, and 15%, respectively.

How are these numbers useful? Imagine that the measure rule says price will rise from 20 to 22 in bull markets. That's a rise of 10%. How many rounding tops will fail to see price rise by more than 10%? Answer: 18%, or 82% of trades will exceed a 10% rise. That's quite good.

Table 56.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	49 or 9%	34 or 17%	80 or 20%	34 or 12%
10	53 or 18%	39 or 37%	75 or 39%	45 or 28%
15	43 or 26%	32 or 53%	52 or 52%	48 or 44%
20	46 or 35%	18 or 62%	52 or 65%	38 or 58%
25	38 or 41%	14 or 70%	45 or 76%	26 or 67%
30	34 or 48%	11 or 75%	25 or 82%	23 or 75%
35	29 or 53%	8 or 79%	22 or 88%	23 or 83%
50	82 or 68%	20 or 89%	37 or 97%	40 or 97%
75	69 or 80%	13 or 96%	11 or 100%	8 or 100%
Over 75	109 or 100%	8 or 100%	0 or 100%	1 or 100%

Table 56.4 shows breakout-related statistics.

Breakout direction. The breakout direction tracks the market trend. The highest percentage of breakouts appears in bull markets for upward breakouts and bear markets for downward breakouts. This makes intuitive sense (as in a rising tide lifts all boats or trade with the [market] trend).

Yearly position, performance. After sorting the samples by breakout direction and market condition, then sorting them again into where they appear in the yearly price range, some of the entries show few samples.

Rounding tops within a third of the yearly low show the best performance. You'll want to avoid those near the yearly high.

Throwbacks and pullbacks. A throwback or pullback occurs about 60% of the time, which is a little low compared to other chart pattern types (which average about 66%). It takes, on average, 11 days for the stock to return to the breakout price. Throwbacks and

pullbacks hurt performance, which is a trend we see in many other chart pattern types.

After a throwback or pullback completes, price resumes trending in the breakout direction most of the time except after downward breakouts in bear markets where price rises 57% of the time (it continues lower 43% of the time).

Gaps. The two outer columns (the trend followers) prefer patterns with no gaps for better performance. Countertrend patterns (the two inner columns) show patterns with gaps have better performance. Because the performance difference in most columns is only one percentage point, I wouldn't lose any sleep over these results.

Table 56.5 shows pattern size statistics.

Table 56.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	58% up	41% up	42% down	59% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 83%*, M 60%, H 54%	L 44%*, M 26%, H 20%	L –18%, M –15%, H –8%*	L –22%, M –16%, H –1%*
Throwbacks/pullbacks occurrence	63%	64%	58%	62%
Average time to throwback/pullback peaks	5% in 6 days	7% in 5 days	–7% in 5 days	–11% in 5 days
Average time to throwback/pullback ends	11 days	11 days	11 days	11 days
Average rise/decline for patterns with throwbacks/pullbacks	54%	22%	–17%	–19%
Average rise/decline for patterns without throwbacks/pullbacks	56%	24%	–18%	–23%
Percentage price resumes trend	85%	63%	63%	43%
Performance with breakout day gap	54%	25%	–18%	–20%
Performance without breakout day gap	55%	22%	–17%	–21%
Average gap size	$0.98	$0.47	$1.18	$1.81

* Fewer than 30 samples.

Height. Tall patterns perform better than short ones in all market conditions and breakout directions. To determine if your pattern is tall, measure the height from highest peak to lowest rim and divide the height by the breakout price. A value greater than the median shown in the table means it's a tall pattern. Give yourself an edge and trade only tall patterns.

Table 56.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	62%	26%	–18%	–23%
Short pattern performance	47%	20%	–16%	–18%
Median height as a percentage of breakout price	24.9%	25.7%	36.2%	52.1%
Narrow pattern performance	52%	22%	–17%	–19%
Wide pattern performance	57%	24%	–18%	–22%
Median width	145 days	83 days	149 days	118 days
Short and narrow performance	48%	21%	–16%	–18%
Short and wide performance	44%	18%	–15%	–19%
Tall and wide performance	64%	26%	–19%	–23%
Tall and narrow performance	60%	25%	–18%	–23%

Width. I used the median width as the separator between narrow and wide. Performance of wide patterns beats that of narrow ones.

Consider trading only wide patterns.

Height and width combinations. Patterns both tall and wide perform as well or better than the other combinations in all four columns. For example, if you trade short and wide patterns in bull markets after upward breakouts, do it often enough and perfectly, you'll make an average of 44%. Trade tall and wide patterns and you'll do almost 50% better, with gains averaging 64%.

Table 56.6 shows volume-related statistics.

Volume trend. The table shows the volume trend, but the results are close to random. Don't discard a chart pattern because it has an unusual volume trend.

Rising/Falling volume. Three of four columns show better performance if volume recedes in the pattern.

Breakout day volume. In all four columns, we see performance improve if breakout day volume is above the 1-month average (heavy volume).

Table 56.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	51% down	59% down	53% up	52% up
Rising volume trend performance	61%	19%	–16%	–20%
Falling volume trend performance	48%	26%	–18%	–21%
Heavy breakout volume performance	58%	23%	–18%	–21%
Light breakout volume performance	44%	22%	–15%	–19%

Table 56.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	48%	–20%
2000s	76%	–14%
2010s	47%	–15%
Performance (above), Failures (below)		
1990s	10%	17%
2000s	6%	23%
2010s	9%	23%

Table 56.7 is supposed to show stop location, but with the pattern so tall, the middle and side opposite the breakout almost never trigger a stop, so I don't show the table.

Table 56.8 shows the performance over three decades.

Performance over time. Performance was outstanding in the 2000s for upward breakouts, but the other two decades showed similar performance. Downward breakouts had the worst performance in the 2000s and the best in the 1990s.

Failures over time. For both columns, failures haven't varied too much from decade to decade. Upward breakouts suffered more failures in the 1990s, but downward breakouts had the fewest then.

Table 56.9 is reserved for busted patterns, but I'll wait for more samples to see if it's worth presenting. Look at Table 56.3, the 10% row. Few patterns fail to see price move 10% or less away from the breakout and busted patterns are even fewer. I don't show the table.

Trading Tactics

Table 56.10 shows trading tactics for rounding tops.

Measure rule. Use the measure rule to capture a price target. Compute the height of the rounding top and add it to the top of the pattern for upward breakouts or subtract the height from the lower of the two rims. The bottom portion of the table shows how often the method works.

For example, if we use the full height of the rounding top for upward breakouts in bull markets, price will reach or exceed the target an average of 58% of the time. Take out the table saw, cut the height in half, and use that in the calculation and price will reach the target an average of 77% of the time.

When using the rule, be sure to look for resistance or support areas. They are areas where the stock is likely to stall or reverse.

In Figure 56.4, for example, point A shows the lowest low at the right rim, 45.63, whereas point B depicts the highest high at 49.88. Add the difference, 4.25 (the formation height), to the price of the highest high (point B) to get the upward breakout target. In this case, the target is 54.13, met in early July.

Table 56.3 gives an example of how to check the probability of the trade failing to reach the target. Refer to the discussion of the table for a cheap thrill.

Buy above 30% retrace. For upward breakouts, the typical entry means buying when price closes above the dome high. If you like to take more risk, buy at a lower price (30% of the formation height, above the right rim low). I use the 30% retrace amount since a rise of that magnitude usually breaks a down-sloping trendline that sometimes forms as price declines during the rounding turn. A breakthrough of a trendline or even a 30% retrace is usually strong enough to command attention from other investors (they jump on the uptrend) and minimizes the chance of a downward breakout.

Table 56.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern's height by subtracting the lower rim low from the pattern's high. Add the difference to the high for upward breakouts or subtract the difference from the lower rim low for downward breakouts to get the target price. The bottom portion of the table shows how often this method works.
Buy above 30% retrace	For a more risky but profitable trade, buy when price rises above the right rim (low) by at least 30% of the pattern's height.
Right low support	The right rim low shows support. If price throws back to this level and continues down, sell or sell short.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching quarter height target	88%	77%	63%	59%
Percentage reaching half height target	77%	57%	38%	35%
Percentage reaching full height target	58%	34%	14%	12%

Right low support. If you purchase a stock after a rounding turn completes (near the bottom of the pattern) and see price rise for a month or so, curl around, and fall below the right rim low, sell the stock. Most likely it is going to continue down. Watch for a bounce at the right rim low as that area sometimes acts as a support zone. As

always, look for other areas of support to gauge how far the decline may go. Even if you see nearby support, the stock may continue lower just to spite you.

Experience

Let me tell you about what I found in my trade review.

J.B. Hunt

I haven't traded rounding tops often. In J.B. Hunt stock, back in 1999, I correctly guessed that the stock had completed a rounding top and bought the stock as it bottomed at the right rim. The stock started to recover and moved higher for about 2 months before it slid below the price of the right rim. I sold my position and took an 8% loss.

I traded this properly and feel glad that I sold when I did. The stock continued down more than 30% below my sale price. (It's always gratifying when your trading decisions are proven correct).

The mistake I made was buying when I did. Had I waited to buy using the 30% rule (buy after price rises 30% above the right rim low), then I would not have entered this trade and would not have taken a loss.

- Lesson: For aggressive traders, wait for price to rise at least 30% above the right rim low.

Rowan Company

In another rounding top trade, here's what I wrote in my trading notebook: “21 December 1999. If this stock [Rowan Company, (RDC)] closes above the old high of 21, then it will be a buy. Otherwise, look for the stock to stall at the top, in a rounding turn failure. However, fundamentals indicate a strengthening demand for drilling rigs. One company is expanding [their] exploration budget by 20% in 2000.”

I bought the stock after it confirmed an upward breakout from a rounding top (a wider view of the chart pattern shows it to be an inverted and ascending scallop).

Nine days later, I wrote more. “I bought at 21, near the daily low of 20 13/16 (as of 9:45 anyway). Oils are weak today, but this [stock] has made a new high and drillers I expect to do well next year. More rigs are coming online now, and drilling activity is picking up. This has peaked above the top of the rounding turn in August, and I expect the stock to continue moving up. I see support at 20, stop at 19.”

I sold in May at 29.75 and made 41% on the trade. Sadly, I don't have any notes about the sale. However, the stock reached the ultimate high of 32.38 a week before I sold (so I was close to a perfect exit). The stock moved sideways, with large price swings for about a year, then headed lower and bottomed near 11.

This was another well-timed trade. I bought at the confirmed upward breakout and held on until the ultimate high and sold near there.

- Lesson: Wait for price to confirm an upward breakout before buying a rounded top.

Sample Trade

Sharon is a high-energy player. She is the one you see careening out of control when skiing down the expert slope. She is the one you see night after night relaxing in a bar after work, surrounded by men. In other words, she is fun to be with, the life of the party.

Her investment style mirrors her lifestyle. When she spotted the rounding top pictured in **Figure 56.4**, she waited for just the right moment to buy. At first she thought it might be a head-and-shoulders top, but the two shoulders and head (B) were at about the same price level and the volume pattern was all wrong.

In mid-June, when price began heading up and pierced the down-sloping trendline, "I bought at 47, gripped tightly, and held on."

As price climbed, she noticed that the oscillations from minor high to minor low seemed to be narrowing. To her, these oscillations indicated that a rising wedge was forming, but the volume pattern was abnormal. With a rising wedge, the volume pattern tends to recede over time.

In early September, "I became concerned because volume declined dramatically." Her research showed a tendency for a severe drop in volume just before a rising wedge breakout, so the day after price pierced the lower wedge trendline, "I sold the stock at 62. Glad I did, too."

Her analysis was perfect. After she sold the stock, price pulled back to the lower wedge trendline and hung on for 2 more days before tumbling. At the start of the New Year, the stock reached a low of 34.13, or 45% below where her sale price.

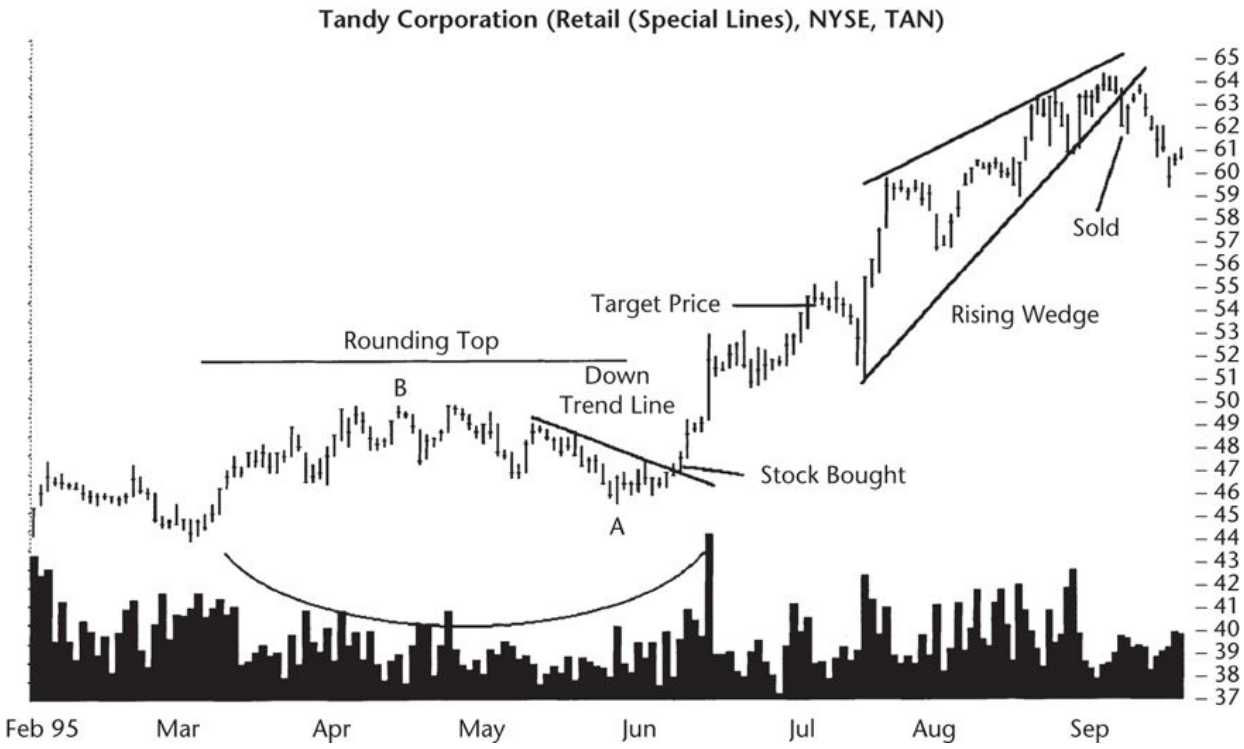
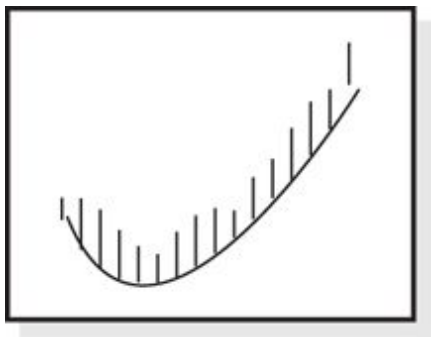


Figure 56.4 A rounding top with a rising wedge. As described in the Sample Trade, this rounding top turned into a profitable opportunity for Sharon.

“I need the cash because I'm thinking of taking up fencing.”

“Construction?” I asked. “You're starting a new business?”

57
Scallops, Ascending



RESULTS SNAPSHOT

Appearance: Price peaks, curves downward, and then forms a higher peak. The price pattern looks like the letter J.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Short-term bullish continuation
Performance rank	20 out of 39	18 out of 20
Breakeven failure rate	11%	18%
Average rise	42%	23%
Volume trend	Upward	Upward
Throwbacks	68%	64%
Percentage meeting price target	62%	35%
See also	Cup with handle; head-and-shoulders bottoms, complex; rounding bottoms	

Downward Breakouts

	Bull Market
Reversal or continuation	Short-term bearish reversal
Performance rank	22 out of 36
Breakeven failure rate	23%
Average drop	15%
Volume trend	Upward
Pullbacks	64%
Percentage meeting price target	29%

What impresses me most about ascending scallops is how poorly they perform. I consider well-behaved patterns as those with breakeven failure rates below 10%. In bull markets with downward breakouts, 23% fail to decline more than 5%. Upward breakouts perform better, but the 11% and 18% failure rates do not inspire confidence. The average rise or decline is also below par for both breakout directions. That's backed up by the performance rank, which is mid-list to near bottom of the list.

Perhaps the only redeeming quality of ascending scallops is their ability to predict the end of the trend.

That's invaluable. That's worth paying attention to.

Some scallops get narrower and shorter when compared with prior scallops in a series. For example, in a line of three ascending scallops, the first one will be wider and taller than the last one. Also, a downward breakout from a scallop perched at the summit (the end of an upward price trend) is bearish and usually means a trend change.

Let's see what these patterns look like, and maybe we'll explore these peculiarities.

Tour

Figure 57.1 shows three ascending scallops, with the first one being an especially wide one. It looks like a rounding bottom except that the minor high, where the scallop ends on the right (in mid-April), is well above the minor high on the left (during early December). This is typical for ascending scallops—the right side should be above the left. However, it is fine if the two peaks are close to each other in price. When that happens, it often signals an end to the series of scallops and the rising price trend.

The J-shape of the scallop appears best on the smallest scallop in the figure. I highlight this one with some consternation. When hunting for scallops, one should look at the price lows, not the highs for the curving trend. If you connect the minor lows of the first two scallops, you see that price has a bowl shape. The bowl shape is not clear in the smallest formation unless you trace along the highs.

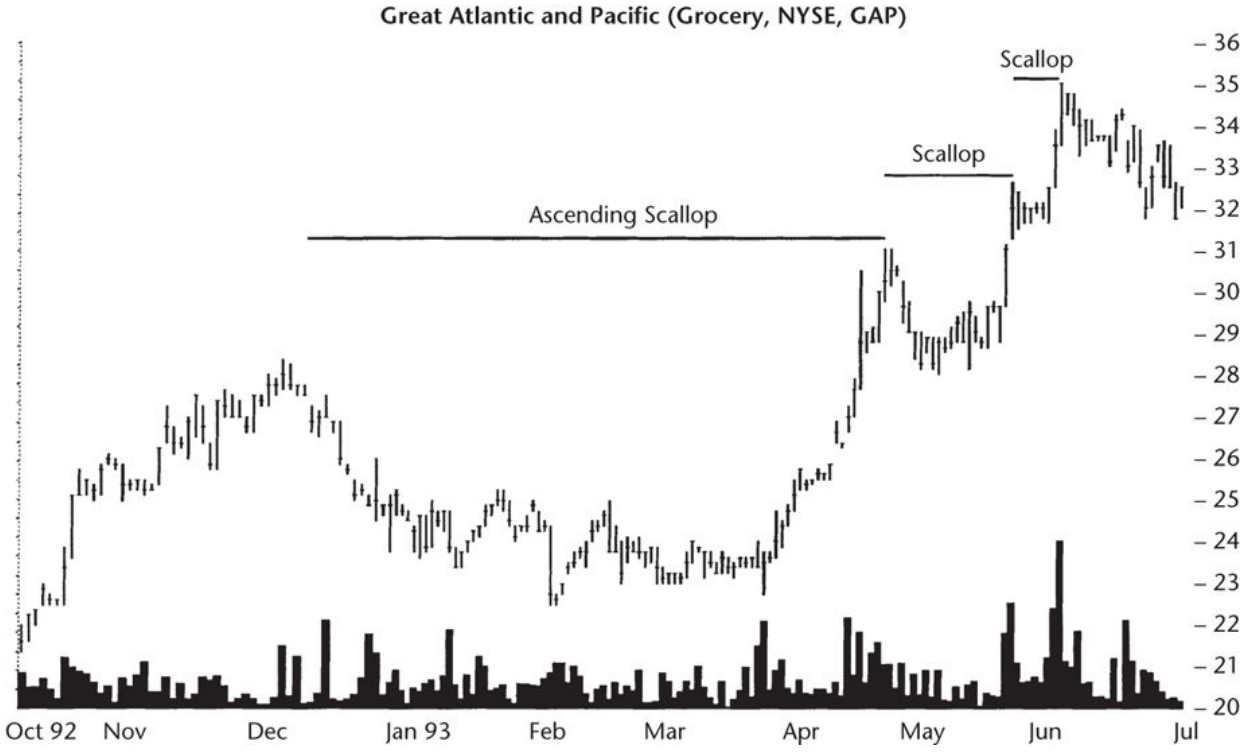


Figure 57.1 Three ascending scallops. Scallops resemble the letter J.

The smallest scallop also has the best volume pattern—a U-shaped trend. This is common for ascending scallops but should not be viewed as a requirement. The first scallop does not have an easily

recognizable bowl-shaped volume trend, but it is there. The volume spikes are higher near the scallop's ends than in the center.

Identification Guidelines

Table 57.1 shows the identification guidelines for the ascending scallop.

Appearance. Ascending scallops resemble the letter J. The peak on the left side is below the right side with a rounded recession in between. The two peaks should not be near each other in price (otherwise, you have a cup with handle, rounding turn, or even a double top chart pattern). There's an exception for this when the appearance of a scallop is near the trend end. They tend to have nearly the same start and end prices.

Price trend. As one might guess from the pattern's name, ascending scallops appear in a rising price trend. Rarely do they occur in a declining trend. More often, the scallop will signal a trend change (from down to up) when it appears after a long downtrend.

Table 57.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for two price peaks with a rounded recession in between and a higher right peak. Ascending scallops look like the letter J.
Price trend	Price should rise leading to ascending scallops.
Volume	Ascending scallops often show a U-shaped volume trend.
Width	Scallops tend to be wider near the start of a trend than near the end, but allow variations.
Breakout direction	Can be upward or downward. A breakout happens when price closes above the top of the pattern or below the bottom of it.

Volume. Volume usually resembles the price pattern: higher at the ends than in the middle. However, do not exclude a scallop with domed or other shaped volume.

Width. Wide scallops usually mark the start of a rising price trend and narrow ones appear near the end of the trend. I base this observation on the average scallop width, so sometimes you see just

the opposite: a wide scallop at the end of a trend and narrower ones near the start.

Breakout direction. Price can break out either up or down; however, because price ends the pattern near the top of it, an upward breakout is most likely.

Figure 57.2 shows two examples of ascending scallops. The left one has an upward breakout and the right one has a downward one. An upward breakout occurs when price closes above the highest high in the pattern (above point A); a downward breakout happens when price closes below the lowest low (below point B).

The J shape of each scallop is well defined with the end far above the price at the start. Between the beginning and end is a rounded-looking, concave recession forming the bottom of the pattern. Sometimes the turn looks irregular with a few price bars getting in the way of a curved line drawn along the valley lows, but that is fine. Use the figures in this chapter as examples of ascending scallops.

Focus on Failures

Scallops suffer from what I call 5% failures. A 5% failure happens when price breaks out in the intended direction but fails to continue moving in the same direction by more than 5%. Price doubles back and heads in the opposite direction, sometimes causing a trader to lose money.

Figure 57.3 shows an example of failure. There is nothing wrong with the April–May ascending scallop. Price rounds up nicely and continues higher while the volume pattern is bowl-shaped if you disregard the twin spikes in early May.

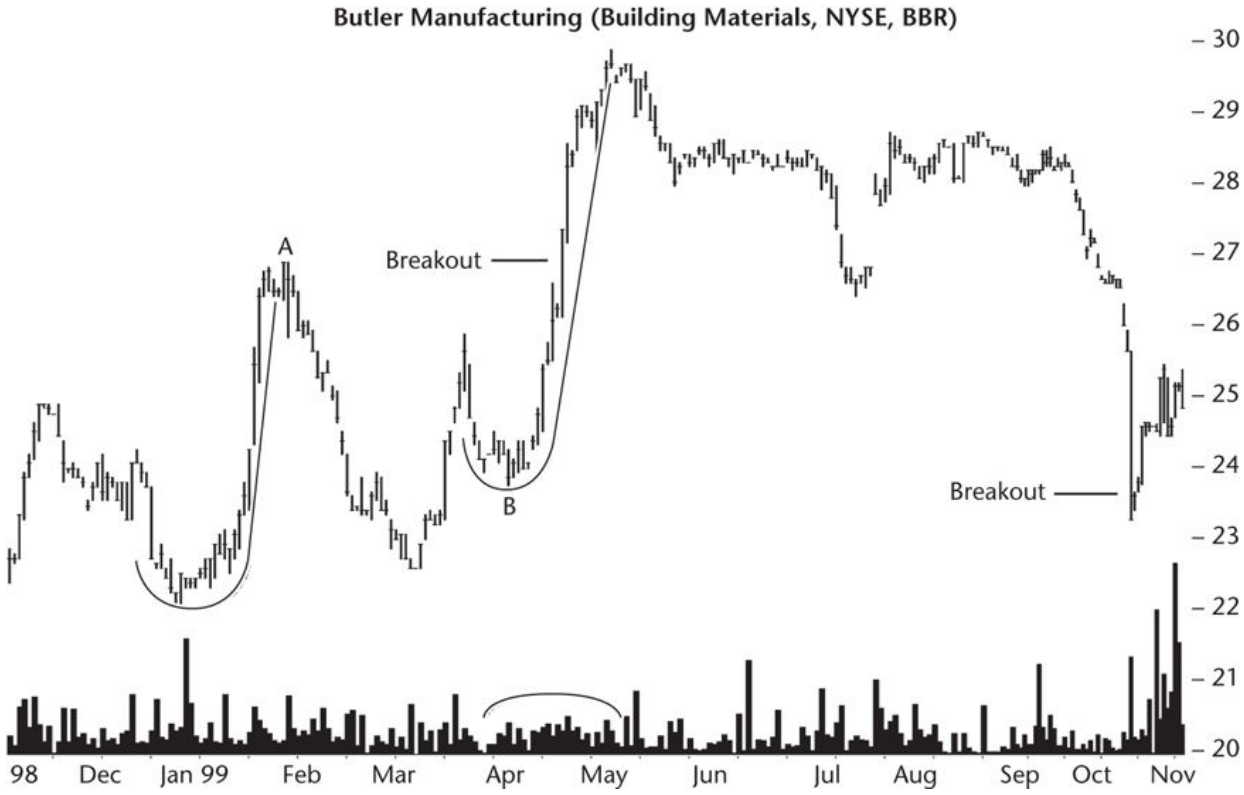


Figure 57.2 Two ascending scallops, the first with an upward breakout and the second with a downward one. Price must close above the top or below the bottom of the scallop to stage a breakout.

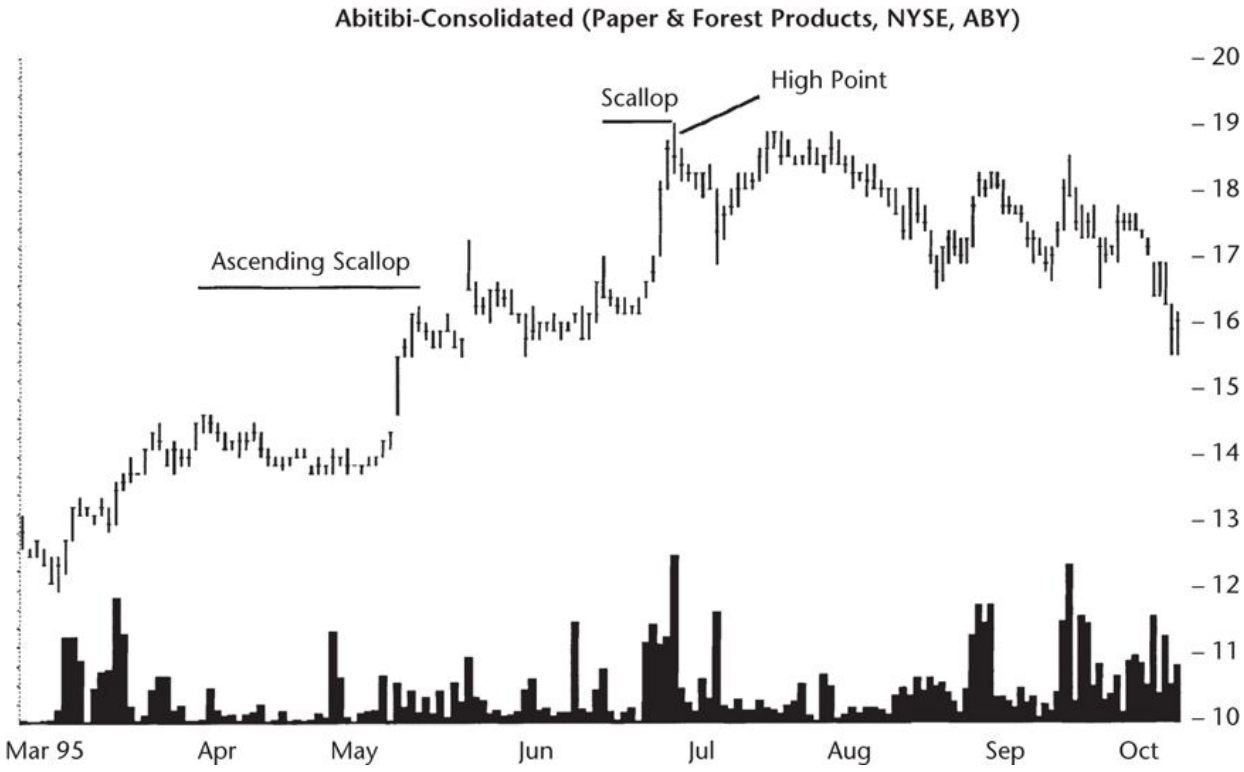


Figure 57.3 An ascending scallop failure in late June. Most scallops act as consolidations of the trend, but the narrow ascending scallop in late June marks the high for the stock.

However, the late June scallop marks the high for the stock. Again, there is really nothing wrong with the pattern. The J shape is pronounced and smooth. The volume pattern is somewhat rugged but higher on either end than in the center. The narrowness of the formation is a clue to its failure (remember, scallops in a series can become short and narrow as price climbs, signaling an end to the upward price trend). It is about 2 weeks wide, which is quite narrow for scallops (the median width is over a month long). From the high at 19, the stock heads down in a choppy manner until the end of the study (mid-July 1996), where it is at 13.50.

Statistics

Table 57.2 shows general statistics.

Number found. I dug up 2,197 scallops in 640 stocks with the first one found in June 1991 and the most recent in November 2019. Not all stocks covered the entire period, and some no longer trade. Because I found so few patterns in bear markets with downward breakouts, they are not included in this chapter. I prefer to leave them off rather than provide misleading statistics that will change when more samples are added.

Reversal (R), continuation (C) occurrence. Scallops with upward breakouts function as continuations of the prevailing (upward) price trend. Downward breakouts act as reversals of that uptrend with 10% sprinkled into the mix that act as continuations of a downward price trend.

Reversal/continuation performance. Upward breakouts see reversals outperforming continuations, and downward breakouts see the reverse.

You can use this information to help give your trading an edge. Most likely, you'll be trading this pattern in a bull market and your scallop will have an upward breakout. Thus, look for the pattern in a downward price trend, where the stock is itching to rise. Make sure the market and industry are trending higher before taking a position.

Table 57.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Number found	1,361	409	284
Reversal (R), continuation (C) occurrence	11% R, 89% C	15% R, 85% C	90% R, 10% C
Reversal, continuation performance	45% R, 42% C	28% R, 23% C	–14% R, –18% C
Average rise or decline	42%	23%	–15%
Standard & Poor's 500 change	11%	–2%	–1%
Days to ultimate high or low	229	67	52
How many change trend?	61%	40%	27%

Average rise or decline. Notice how the average rise in bear markets, at 23%, is substantially less than the 42% rise in bull markets. The difference may be due to the market trend, where bear markets hold down bullish stocks. I guess it's like trying to light a fire when the wood is wet (unless the wetness is due to starter fluid, of course).

Standard & Poor's 500 change. Notice how the large up move in the S&P (11% rise) helped scallops with upward breakouts in bull markets perform (42% rise). Bear markets (2% decline) held down the scallop's price rise (23%) in the middle column. The results reinforce the belief that you should trade in the direction of the prevailing market trend and avoid countertrend trades.

Days to ultimate high or low. Compare the 229 days it took scallops in bull markets to climb 42% with the 67 days in bear markets to climb 23%. Prorated, the bear market rise is 1.9 times faster than the bull market. Both have price rising, too.

Let's compare stocks that drop in bull markets with those that rise. I found that the drop is 1.6 times faster than the rise.

These findings are not unique to ascending scallops. Price moves faster in bear markets than in bull ones.

How many change trend? This is a measure of how many scallops see price rise more than 20% after the breakout. Values above 50% are delish, so upward breakouts in bull markets are solid. The other two columns need work. The average for downward breakouts in bull markets for all chart pattern types is 28%, so scallops fall short of that benchmark, too.

Table 57.3 shows failure rates for ascending scallops. Read the table this way. For upward breakouts in bull markets, 11% of stocks failed to see price rise more than 5% after the breakout. The failure rate more than doubles to 21% for scallops failing to see price rise more than 10%.

Notice how the failure rates climb. They double for moves from 5% to 10% and show steady increases thereafter. Also notice how the failure rates increase from the left column to the right one. I'm not sure of the significance of that, but it caught my attention.

Table 57.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
5 (breakeven)	149 or 11%	73 or 18%	66 or 23%
10	133 or 21%	75 or 36%	60 or 44%
15	115 or 29%	50 or 48%	46 or 61%
20	133 or 39%	46 or 60%	34 or 73%
25	97 or 46%	39 or 69%	25 or 81%
30	103 or 54%	26 or 76%	21 or 89%
35	68 or 59%	21 or 81%	12 or 93%
50	178 or 72%	40 or 90%	16 or 99%
75	171 or 84%	20 or 95%	4 or 100%
Over 75	214 or 100%	19 or 100%	0 or 100%

Table 57.4 shows breakout-related statistics.

Breakout direction. This row tells how often a scallop will break out upward or downward, sorted by the market condition (bull or bear). Upward breakouts happen frequently because price at the end of the pattern is at the top of it rather than at the bottom of it. So expect an upward breakout.

Yearly position, performance. Because the scallop is tall, you'll find more breakouts near the yearly high than the low (for bull markets with upward breakouts, we have sample counts near yearly high: 1,105 patterns; middle: 175 patterns; and low: 40). With over a thousand patterns with breakouts near the yearly high, the 42% rise is robust and it matches the average rise for the chart pattern (Table 57.2).

Table 57.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Breakout direction	83% up	74% up	17% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 39%, M 45%, H 42%	L 34%, M 25%, H 22%	L –17%, M –14%, H –12%
Throwbacks/pullbacks occurrence	68%	64%	64%
Average time to throwback/pullback peaks	6% in 6 days	8% in 6 days	–7% in 6 days
Average time to throwback/pullback ends	12 days	11 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	42%	23%	–15%
Average rise/decline for patterns without throwbacks/pullbacks	43%	25%	–14%
Percentage price resumes trend	80%	65%	57%
Performance with breakout day gap	40%	21%	–16%
Performance without breakout day gap	43%	24%	–15%
Average gap size	$0.43	$0.34	$0.38

The numbers suggest, however, that those with breakouts in the middle third of the yearly price range outperform. The other two columns prefer those patterns near the yearly low, but they will be difficult to find (too rare).

Throwbacks and pullbacks. Throwbacks and pullbacks happen twice in every three trades, on average. When they do occur, it takes

11 or 12 days for the stock to return to the breakout price.

In two out of three columns, a throwback or pullback hurts performance, but the performance differences are slight. However, this finding matches what we see for other chart pattern types where a throwback or pullback hurts performance. Often the performance difference is by a significant amount, too.

After a throwback or pullback completes, price resumes trending in the breakout direction most often as the table shows.

Gaps. Performance improves if scallops do *not* have a gap appear on the breakout day (except for downward breakouts in bull markets). That's different from trading lore and from the results of other chart pattern types.

Table 57.5 shows pattern size statistics.

Height. Tall patterns outperform short ones in all market conditions and breakout directions. Height is an important tool to gauge likely performance. Measure the height from the highest high to the lowest low in the scallop and then divide by the breakout price (which is either the highest high or lowest low in the scallop). If the result is higher than the median shown in the table, then you have a tall scallop.

Table 57.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Tall pattern performance	43%	27%	–16%
Short pattern performance	41%	19%	–13%
Median height as a percentage of breakout price	18.2%	22.7%	18.7%
Narrow pattern performance	40%	23%	–14%
Wide pattern performance	44%	24%	–15%
Median width	41 days	36 days	37 days
Short and narrow performance	40%	21%	–13%
Short and wide performance	43%	17%	–13%
Tall and wide performance	45%	27%	–17%
Tall and narrow performance	41%	28%	–16%

Width. Wide patterns perform better than narrow ones in each column, too. I used the median length as the separator between wide and narrow. However, the performance difference is highest in bull markets with upward breakouts.

Height and width combinations. The combination of height and width usually follows the individual traits of height and width but not always. Avoid trading short scallops (either wide or narrow).

Table 57.6 shows volume-related statistics.

Volume trend. I used linear regression to determine the volume trend. Ascending scallops frequently show a rising volume trend. Most chart pattern types show receding volume. Don't discard a scallop just because it has a downward volume trend.

Rising/Falling volume. Scallop performance varies depending on the volume trend, as the table shows. If volume is important to you, then consult the table to see which market and breakout direction will give you the best chance of a winning trade.

Breakout day volume. Heavy breakout volume propels a stock farther than a breakout on weak volume, according to the performance numbers in the table. I used the 30-day average (leading to, but not including the breakout day) as the separator between heavy and light.

Table 57.7 shows how often price reaches a stop location. Upward breakouts will see high rates of a stop being triggered if the stop is placed at the top of the scallop, and downward breakouts will see the bottom of the pattern triggering a stop frequently. That's common sense, of course.

Because an ascending scallop can be tall, you'll want to change the potential loss into a percentage of the current price. Many traders try to limit losses to 8%, so if you're predicting a loss of 25%, then either move the stop closer or consider picking a different stock. You might try using a volatility-based stop, too. See the Glossary for details.

Table 57.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Volume trend	71% up	74% up	69% up
Rising volume trend performance	41%	24%	–15%
Falling volume trend performance	44%	21%	–14%
Heavy breakout volume performance	43%	24%	–16%
Light breakout volume performance	40%	21%	–12%

Table 57.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Pattern top	80%	80%	0%
Middle	15%	12%	10%
Pattern bottom	2%	1%	75%

Table 57.8 shows the performance over three decades. Because bear markets only happened in the 2000s, they are not included in the statistics.

Performance over time. Upward breakouts did well in the 2000s, and downward breakouts show the worst performance during that decade.

Failures over time. The failure rate over the last three decades (upward breakouts) has been consistent for scallops even though the performance shows a higher variation from decade to decade.

Table 57.9 shows busted pattern performance.

Busted patterns count. Comparatively few ascending scallops bust. That's probably because the pattern is so tall. Let's imagine that a scallop has an upward breakout. A bust occurs when price rises no more than 10% above the breakout, reverses, and drops all that way down to close below the bottom of the scallop.

Busted downward breakouts follow a reverse pattern. Price breaks out downward and drops no more than 10%, reverses, and closes above the top of the scallop to bust the chart pattern.

I would expect downward breakouts in bull markets to show higher bust rates than upward breakouts, which is what the table shows. I would also expect upward breakouts in bear markets to bust often.

Busted occurrence. I sorted the bust types into three bins: single, double, and more than two busts (triple+). Most of the time, the stock will single bust. Again, that's probably because the pattern is so tall.

Table 57.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	38%	–15%
2000s	54%	–13%
2010s	42%	–16%
Performance (above), Failures (below)		
1990s	11%	24%
2000s	10%	22%*
2010s	12%	22%*

* Fewer than 30 samples.

Table 57.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Busted patterns count	210 or 15%	119 or 29%	99 or 35%
Single bust count	125 or 60%	100 or 84%	76 or 77%
Double bust count	69 or 33%	15 or 13%	4 or 4%
Triple+ bust count	16 or 8%	4 or 3%	19 or 19%
Performance for all busted patterns	–15%	–20%	38%
Single busted performance	–21%	–22%	48%
Non-busted performance	–15%	–19%	42%

Busted and non-busted performance. With these three rows, I wanted to compare if busted patterns perform better than non-busted ones. The table shows that single busted scallops (which happen most often) beat the non-busted counterparts.

The tricky part is to pick a scallop that busts only once. I haven't found a reliable way to determine how many times a stock will bust. Perhaps looking at the historical record to see how wavy the stock looks might help. After all, if a stock has been trending higher in a near-straight-line run for years, you might conclude there's a good chance it'll single bust. A stock that has a history of making large price swings might bust more than once.

Trading Tactics

Table 57.10 shows trading tactics.

Measure rule, targets. The first trading tactic is to determine how far price is likely to move once the scallop completes. This gauge is called the measure rule because it involves measuring the scallop's height and applying it to the breakout point.

To use the measure rule, calculate the height by subtracting the lowest low reached in the bowl from the high reached on the right side of the scallop. For upward breakouts, add the height to the top of the scallop to get a target. For downward breakouts, subtract the height from the lowest low.

An example makes the calculation clear. Consider the ascending scallop that forms during late September as shown in Figure 57.5. Apply the measure rule to this scallop by subtracting the formation base from the right side high. Point B shows the pattern's low at 12.50, and the right side high, point A, is 16. The difference of 3.50 is the height. Add the height to the right-side high (point A) to get the target price of 19.50. Price meets the target in late April (not shown on the chart). If the scallop breaks out downward, then subtract the difference from the scallop's low (point B) to get the target price. In such a case, the target would be 9 (12.50 – 3.50).

Table 57.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height of the scallop by taking the difference between the highest high and the lowest low in the pattern. For upward breakouts, add the difference to the highest high. For downward breakouts, subtract the difference from the lowest low. The result is the price target. The bottom portion of the table shows how often price reaches the target based on various heights.
Handle	Expect price to retrace a portion of the scallop after it completes (but this is not always the case, and the retrace can include the entire height of the scallop so that price breaks out downward).
Buy point	Take a position in the stock once price closes above the top of the scallop (an upward breakout). Performance doesn't suggest trading a downward breakout.
Stop location	See Table 57.7 for stop placement.
Even ends	Scallops with near-even start and end prices suggest a trend ending.

Trading Tactic	Explanation
Scallops in a series	In a rising price trend, some scallops tend to become shorter and narrower. If the start and end prices of the pattern are near the same value, then the uptrend may be nearing an end.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Percentage reaching half height target	80%	61%	57%
Percentage reaching full height target	62%	35%	29%
Percentage reaching 2× height	39%	14%	8%
Percentage reaching 3× height	27%	6%	2%

Let's use Table 57.3 as a sanity check. For a downward breakout, we predict a drop to 9 from 12.50. Does that sound reasonable? That's a 28% drop. The table says that in bull markets 46% will fail to see price drop more than 25%, and 54% will fail to drop more than 30%. Let's split the difference and call the failure rate 50%. Half the patterns will fail to drop more than about 28%. That's a high failure rate.

Let's return to Table 57.10. How often does the measure rule work? The bottom portion of the table shows the success rate using various heights in the calculation. In our example above, we used the full height. The scallop appeared in a bull market and has an upward breakout. The table says the measure rule will work, on average, 62%

of the time. If you cut the height in half (please use a sharp blade) and apply it to the formula, it should work 80% of the time.

Handle. Once a scallop completes, price declines (usually, to form a handle). It retraces all or a part of the gains made as the scallop developed. Sometimes it begins building another scallop.

In the figure, for example, you can see that the retrace after the first scallop brings price down to the bowl of the next scallop at 14.25. The retrace after the November scallop sees price return to near the prior bowl's low (B).

Buy point. After price finishes declining in the handle (assuming it does retrace only a portion of the scallop), consider buying the stock.

Stop location. Table 57.7 shows various locations for stop placement. Because the pattern can be quite tall, be sure to change the potential loss into a percentage of the current price. If the value is too high, then either move the stop or look for a different chart pattern.

Even ends. In a series of ascending scallops in a single trend, many times the highest scallop in the series will look like a rounded turn or double top with the start and end of the scallop sharing almost the same price. A downward breakout may follow immediately or a trend change will occur soon after.

Scallops in a series. I looked at consecutive scallops in a rising price trend and found that they tended to get narrower and shorter the higher up the price trend they appeared. Figures 57.1 and 57.3 show examples of this.

I have seen scallops get wider as they climb, too, so the findings vary from stock to stock. If you see a scallop appear after a long uptrend and it seems *unusually wide* (rare) *or narrow* (more common), the end of the trend may be near. Consider looking elsewhere for a more promising trade. What does *unusually wide or narrow* mean? Use the width values from Table 57.5 as guidance. Since scallops are plentiful, search for them in the stock you intend to trade and in other stocks in the same industry to get a better feel for the typical scallop width and height.

Experience

I traded one ascending scallop in JLG Industries (JLG), so let me tell you about it. I show it in **Figure 57.4**. The figure looks complicated, so let's tear it apart so you will understand my decisions.

A small pennant appears at D, and it sits atop a flagpole that started at G. The idea behind pennants is that the move after the pennant will mirror the height of the flagpole. It didn't happen in this case, though. Price climbed only to F.

On 11 October, I decided to buy the stock, and point A shows the day of purchase. The stock filled at a split-adjusted price of 8.22.

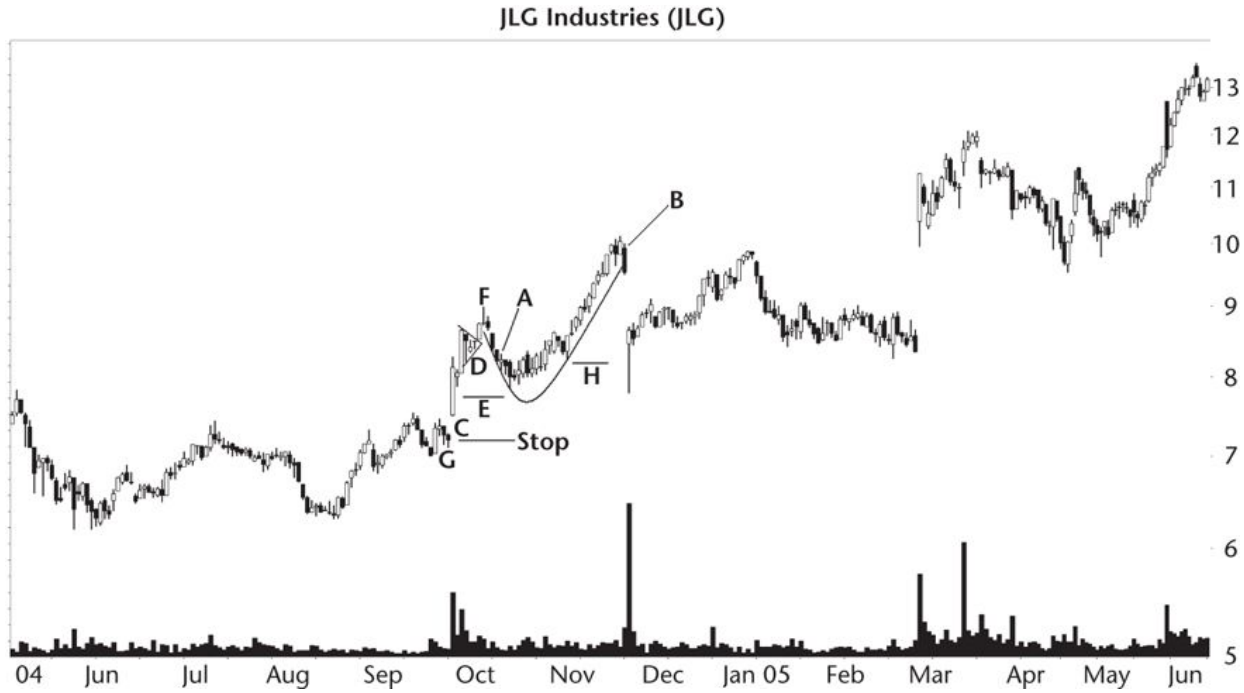


Figure 57.4 This ascending scallop led to a timely trade exit when the company announced earnings.

Why buy there? From my notebook: “This is approaching the 62% retrace from the low at 7.11 to the high at 8.99. I think, after three down days and perhaps another today, the stock will move up tomorrow. More traders will return from the Columbus Day holiday and help the market move up. This [stock] may move horizontally, gathering strength for the next up move.”

The 62% value retraces the climb from G to F as price slides back down toward A. The bottom of the bowl sits on the 62% retrace value of 7.82. My prediction of the stock moving higher was premature by 3 days.

I placed a stop-loss order at 7.22. “Below the gap, below the pennant apex, and below the 62% retrace, but the loss is large: 12%.” I show the original stop location as the lowest horizontal line in October, near G.

The upside target was 8.73 (17.45 split unadjusted), just below round-number resistance at 17.50 (split unadjusted) and “below the tail's high at 8.99.” The tail is price bar F. If you look closely, you will see how price opens and closes near the bottom of that day. It's a one-day reversal (gravestone doji in candle-speak), signaling a downward move.

On 28 October, I raised the stop to 7.74, which is line E, just below the bottom of the bowl.

A few weeks later (16 November), I raised the stop again to 8.22, shown at H. That was two days before B. I tucked the stop below the slight a minor low at H. With the price at 10.07 and the stop at 8.22, that's a potential 18% loss, which is ten percentage points higher than I like to see.

When I placed the stop, it was clear an ascending scallop had formed between points F and B.

The day after the stock peaked, I sold. Here are my notes: “Sell reason: Hitting a round number (20, split unadjusted). On monthly scale, it's at a horizontal trendline of a right-angled and descending broadening pattern [not shown]. I anticipate a drop to 9.00 (50% retrace of prior up move), then a punch through the trendline. This has been trending upward for too long without a retrace. Lots of overhead resistance to prevent price from moving up much higher. Volume is dropping even as price rises. This may coast up to 10.50 (site of the old horizontal trendline) before collapsing. The ascending scallop will retrace, forming a handle. I want to sidestep the retrace and buy again after its drops.”

The stock filled at 9.93, the opening price for candle B. On that day, probably after the market closed, the company announced earnings

that the market didn't like. The stock gapped open lower the next day (combination breakaway and exhaustion gap), reaching a low 22% below my sell price.

I don't even think I was aware of the earnings release because I made no mention of it in my trading notebook.

On the trade, I made 21% in 39 days. Thank goodness I sold when I did.

- Lesson: I used the potential retrace (handle) from an ascending scallop to signal a timely exit to a trade on the day of an earnings announcement. Be aware of when earnings reports are due because they can affect the stock dramatically.

Sample Trade

Kristy was intrigued by the scallop shown on the left in **Figure 57.5**. The irregular bottom shape in the bowl concerned her as did the falling volume trend. But she liked the prospects for the restaurant company, and her fundamental analysis was thorough, tasty, and filling.

Before she bought the stock at point C, she computed the estimated gain and compared it to the risk of loss. The targeted rise was to 18.75 (she calculated using the right-side peak 3 days earlier). The risk point was 14, the high of the left side and a massive support area reached in early 1994. At her purchase point of 15.25, the risk was 1.25 (15.25 – 14) and the potential reward was 3.50 (18.75 – 15.25). The nearly three-to-one ratio was high enough to risk a trade.

I wrinkled my nose.

“What?” she asked.

“I don't like risk–reward ratios.”

“Why?”

“Often the trades I take have lousy ratios, but after I sell, the reward comes in many times the risk. If I obeyed the ratio, I'd have skipped the trade.”

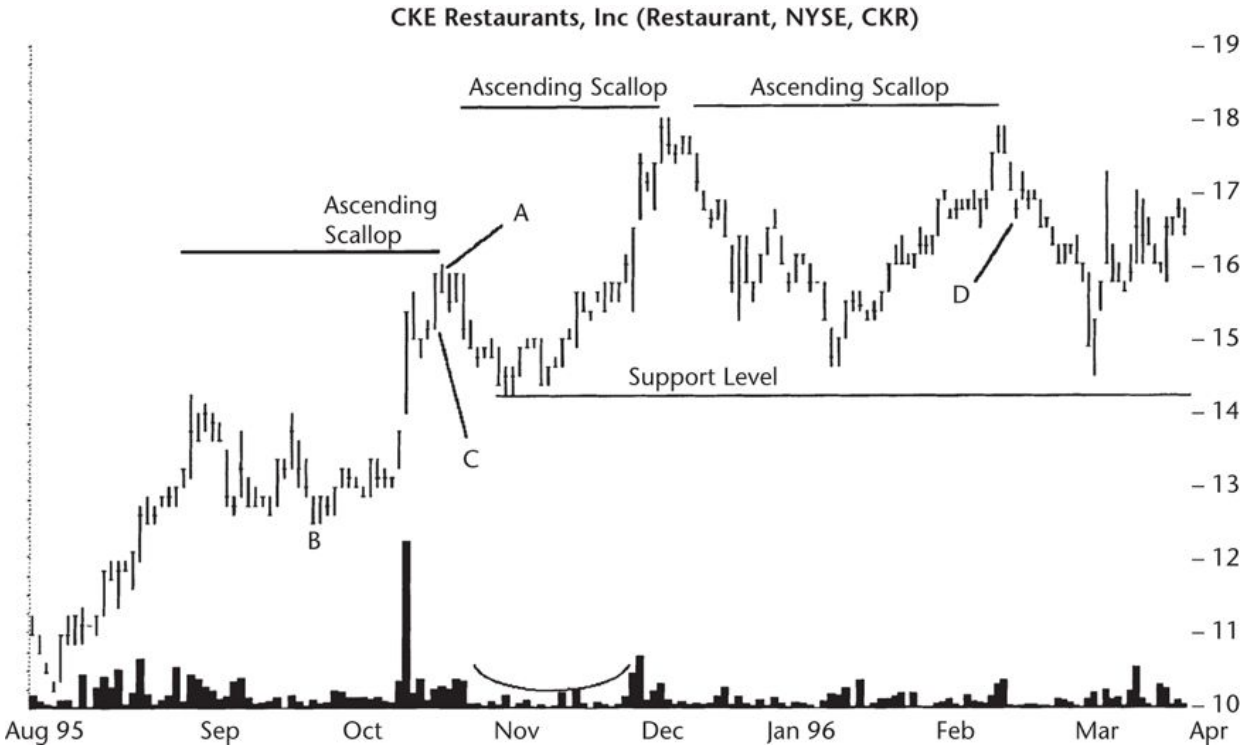


Figure 57.5 Three consecutive ascending scallops. As described in the Sample Trade, Kristy bought the stock at point C once price rose above the top of the ascending scallop. The last scallop has a V-shaped bowl and a right rim that almost makes it to the high of the left side. She sold at point D.

“What you're saying is that you're either lousy at estimating how far price is going to move or you hold on longer than expected.”

I shrugged. “Does anyone really know how far price will rise or fall? Tell me more about your trade.”

She felt gratified when price closed at the high for the day, suggesting price the following day would move higher still. When she looked at the stock the next day, price *did* reach a new high but closed lower.

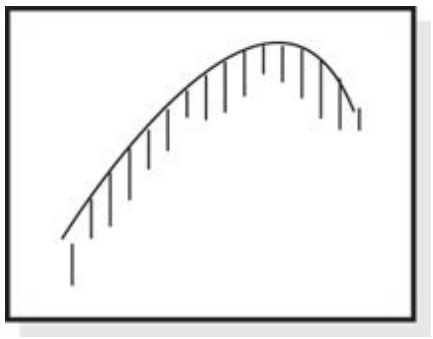
Over the next two weeks, as she posted her daily quotes for the stock, the declining price trend worried her, but not unduly so. Kristy recognized the rounding turn of another scallop forming and saw that her stop held.

Day by day she followed the stock and did not like the third scallop in the series (the rightmost one). The bowl shape was irregular with an unconvincing volume pattern. When price stopped at the old high

before collapsing, she believed the rise was at an end. “I pulled the plug on the operation at 16.75,” shown as point D in the figure, when price pierced an up trendline from the bowl low (not shown, but it begins in January 1996 and hugs the minor lows going upward toward D).

In the short term, Kristy was right in that price headed lower. It moved down until reaching the low of the bowl but then rebounded. By mid-June, the stock had nearly doubled, reaching a high of 28.75, 10 points above the target price of 18.75. Even so, on her 1,000 shares, she cleared almost $1,500 on the trade.

58
Scallops, Ascending and Inverted



RESULTS SNAPSHOT

Appearance: Looks like a backward and upside-down J.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Intermediate-term bullish continuation
Performance rank	14 out of 39	9 out of 20
Breakeven failure rate	9%	9%
Average rise	45%	28%
Volume trend	Downward	Downward
Throwbacks	66%	67%
Percentage meeting price target	64%	53%

Years ago, after looking at ascending and descending scallops, I wondered whether they had inverted counterparts and what they might look like. It did not take long before I discovered the ascending and inverted variety. I thought it showed great promise and studied it briefly before setting it aside. This chapter takes a closer look at the pattern's performance.

The chart pattern looks like a backward and upside-down J. The breakeven failure rate is low, 9%, giving it a rank of 7 in bull markets and 4 in bear markets, where a rank of 1 (best) has the fewest failures. The average rise is 28% in bear markets, but that's good enough to rank the pattern ninth for performance.

Tour

What does an ascending and inverted scallop look like? **Figure 58.1** shows two examples. The left scallop begins at point A and ends at B; both are minor lows that mark changes in the short-term price trend. The volume trend is unremarkable except for a slight downward tilt. The second scallop starts at B and ends at C. The volume trend of this scallop is dome-shaped as shown.

I like to see a rounded top on the scallop, but a nubbin or two sticking out is fine. Sometimes the rounded shape appears not as a line connecting the highs, but connecting the lows. The key is that it looks like an upside-down and backward J, tilted to the right.

Figure 58.1 After a long-term uptrend, price retraces and forms the first scallop, starting at point A and ending at B. The second scallop begins at B and ends at C. Note that the horizontal distance from A to B is wider than B to C. This difference is typical for multiple scallops in a single uptrend.

Identification Guidelines

After manually searching through hundreds of inverted scallops, I developed the identification guidelines that appear in **Table 58.1**.

Appearance. Look at **Figure 58.2** for an example. Price moves up smartly at the pattern's start in late October and then rounds over at the top of the scallop. The pattern looks like the letter J flipped upside-down and reversed.

Because scallops often don't confirm in a sustained downward price trend (except at the turn from bear to bull, like that shown in Figure 58.1 for the AB pattern), you'll find them most often in a rising trend.

Daily chart. I used the daily chart to find the pattern, but I am sure they come out like worms after a heavy rain on most any time scale. The longer ones appear on the weekly chart, but I did not check the intraday chart to see what they looked like or how they perform.

Smooth top. I ignored those patterns with a sharp or pointed top, but did allow a few that had a one-day tail shooting out the top. They reminded me of a single tree on a hilltop. As long as the hilltop looks smooth, then your selection is fine.

At the round top of the pattern, sometimes a line connecting the daily low prices and not the daily highs appears smoother. You can see (but it might be difficult) this situation in Figure 58.2. Two short trees peek out from the hilltop at the top of the scallop and the pattern would appear better if a logger came along and harvested them. If you connect the low prices, the turn is smoother than if you connect the high prices.

Retrace. The pattern begins at point A, tops out at B, and retraces to end at C. The average retrace from B to C when compared to the AB length is 54%. This retrace amount varies widely but in no case must the low at C drop below A. If it does, then look for another scallop.

Table 58.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price trends up, then rounds over at the top, forming an inverted and backward J.
Daily chart	Use the daily chart to find the pattern, although the larger ones also appear on the weekly charts.
Smooth top	Look for daily high prices that, when connected, form a smooth turn. Larger patterns may not be as smooth because you are connecting minor highs.
Retrace	The rounded top portion of the pattern usually retraces about 50% of the prior up move. Price must not drop below the pattern's start.
Breakout direction	Upward when price closes above the top of the scallop pattern. Fewer than 10% break out downward. Ignore those with downward breakouts.
Confirmation	Price must close above the highest high in the pattern. Only then is the pattern valid.

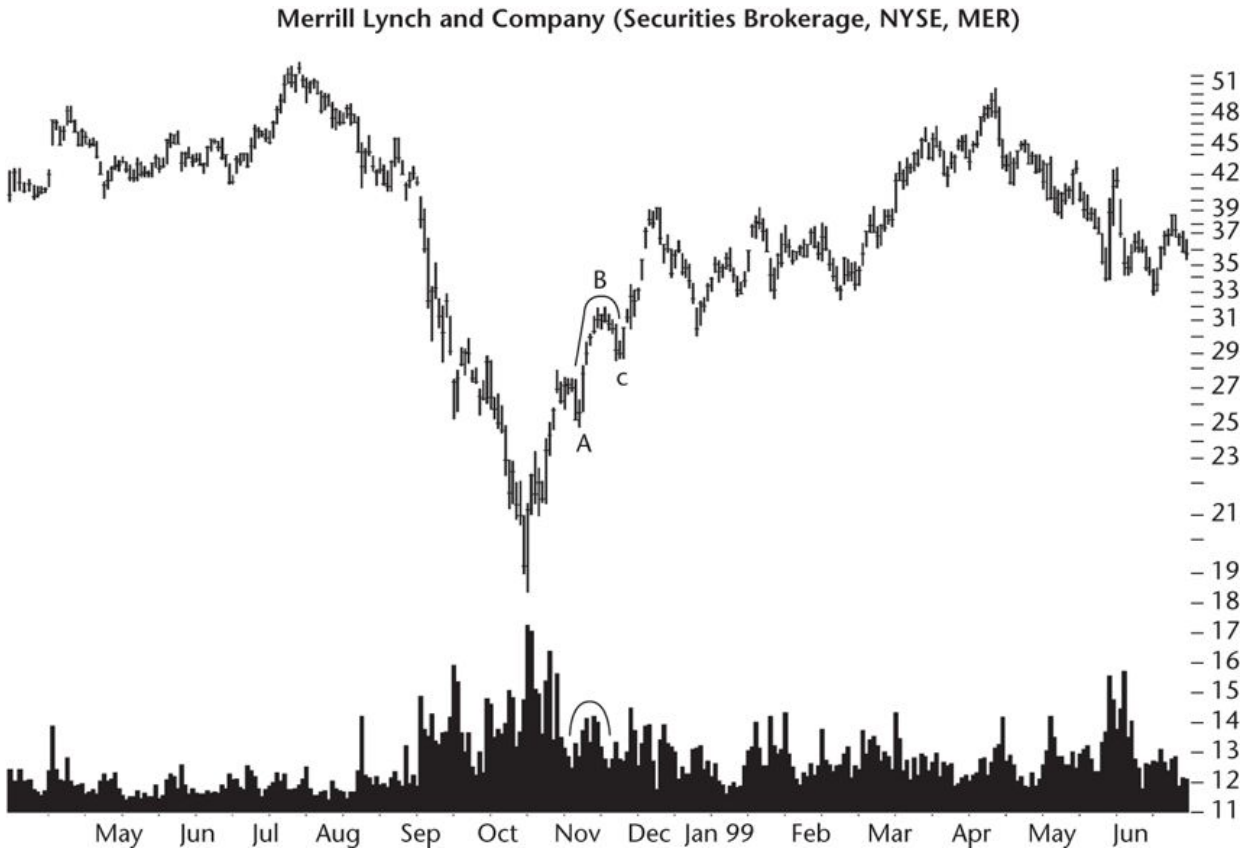


Figure 58.2 This scallop appears rounder if you connect the low prices instead of the high prices.

Breakout direction. Ascending and inverted scallops can break out in any direction, but you'll find most (over 90%) break out upward. That happens when price closes above the top of the scallop.

A downward breakout would see price drop all the way down to close below A, the bottom of the scallop. Scallops with downward breakouts are too few to be worth serious consideration. For that reason, I don't include them in this chapter.

Confirmation price. Always wait for confirmation, that is, for price to *close* above the pattern's high. Only then does the pattern become a valid scallop with an upward breakout.

Figure 58.3 shows an example of domed-shaped volume from October to December that starts when the middle scallop begins but finishes before the scallop ends. This action is typical but should not influence pattern identification.

I included this picture because the width of the three inverted and ascending scallops narrows as price climbs. Such narrowing gives traders a clue to the trend end. If you see a narrow scallop forming, consider whether the upward trend is long in the tooth and due to reverse. Then trade accordingly. This stock climbed to 46 in mid-June 2002 before tumbling to almost 30 in July (not shown).

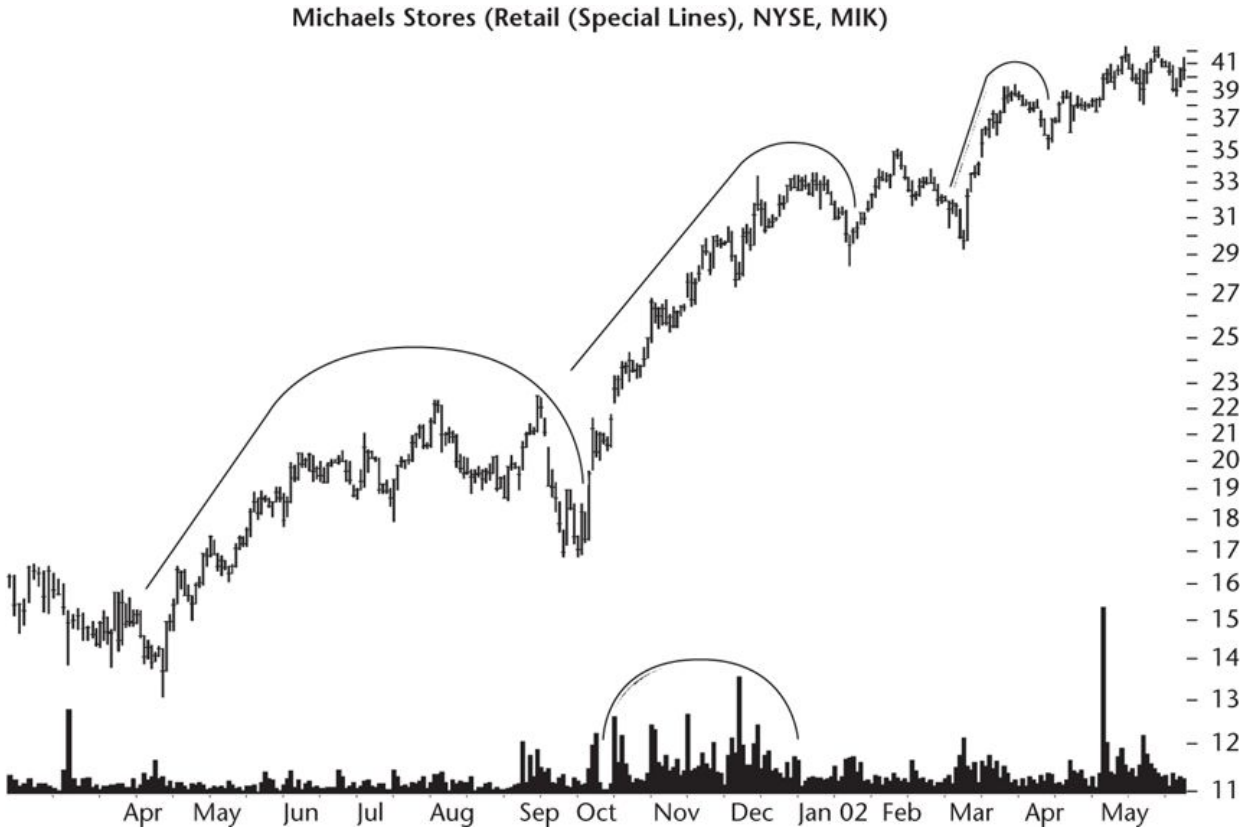


Figure 58.3 Notice how scallops become shorter and narrower as price rises.

Focus on Failures

How does the scallop fail? Most of the problems deal with selecting patterns incorrectly. Identification is never easy until you become acquainted with the pattern, so here are two scenarios to look for. The first, shown in **Figure 58.4**, is selecting a pattern in a downtrend.

If you are lucky, your pattern will confirm and price will rise in a long-term bull trend. However, you'll want to avoid lemons like that shown in the figure.

Price is falling going into the start of the pattern, then reverses, and the scallop builds. Price breaks out upward when it closes above the highest high in the scallop. Unfortunately, the market downdraft sucks price lower, and with overhead resistance, this trade is doomed.

The lessons from this chart are two: First, watch the prevailing price trend. Select patterns in a rising price trend and avoid those in a downtrend. Second, always search for support and resistance zones before investing. Those chart patterns are the most important as they help you gauge the expected price move in either direction. My book, *Trading Classic Chart Patterns* (Wiley, 2002), gives a good tutorial on support and resistance and includes performance statistics.

Figure 58.5 shows the second type of failure. Two of the three patterns are valid ascending and inverted scallops. Which one is the dud? You might guess the first one, and I admit the top looks more like a flat rectangle than a rounded scallop. The variation in patterns is so wide that you have to be flexible; you can always ignore the questionable ones and trade the sure things.

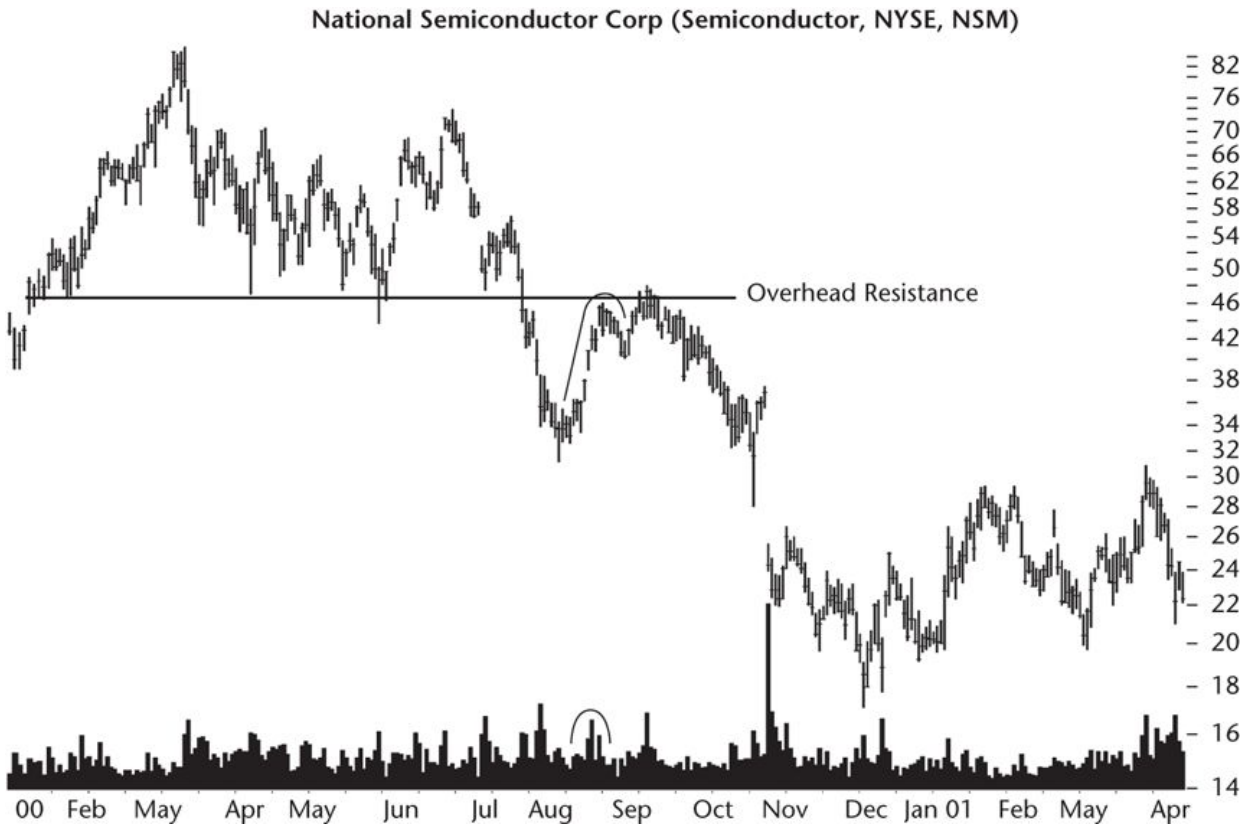


Figure 58.4 This is a valid pattern because it confirms, but the bearish trend should give a trader pause. Coupled with overhead resistance, this trade was a nonstarter.

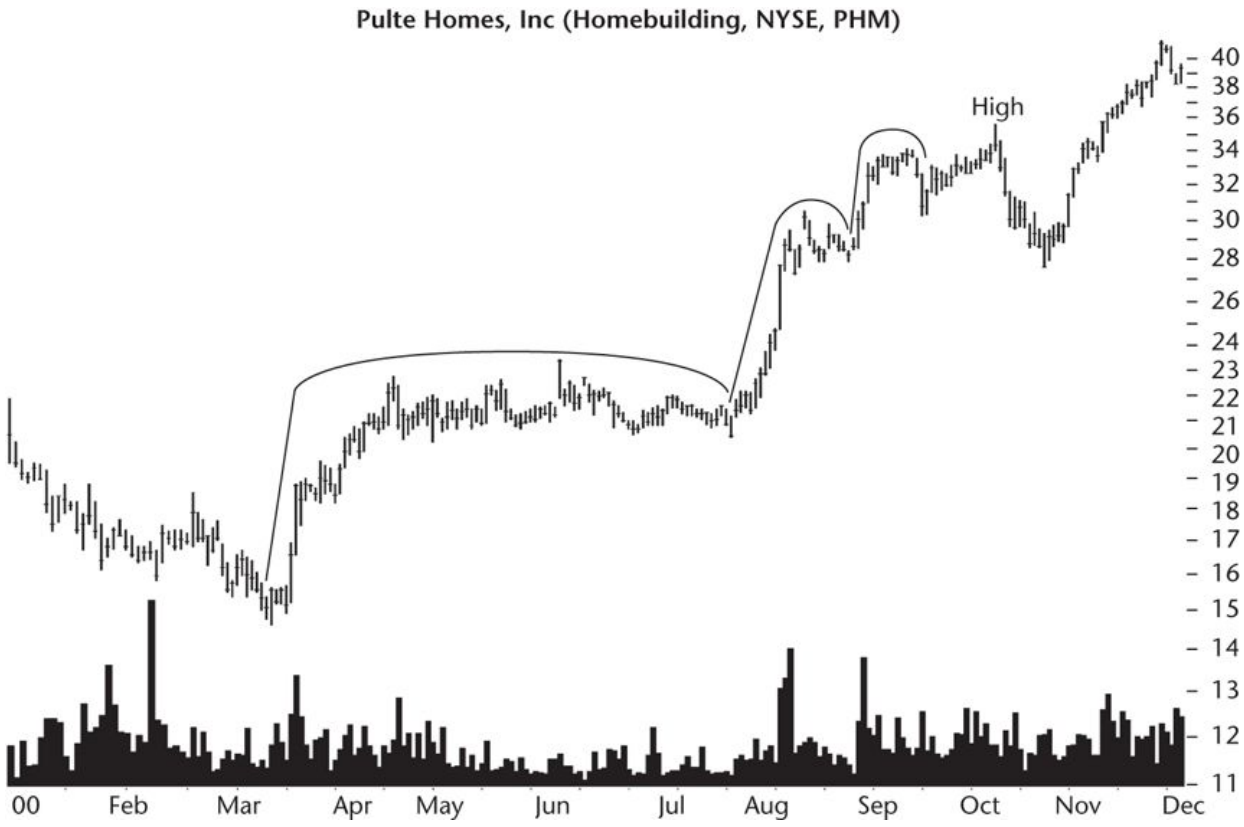


Figure 58.5 What is wrong with the highest scallop? The pattern never confirms before price drops below the pattern's low.

The middle pattern has a top that looks like a symmetrical triangle. It's not as rounded as I like to see, but it's fine.

The last and highest scallop has no rounded turn to speak of. If you ignore the up-sloping (instead of rounded looking) top, the right scallop is the dud because it does not confirm. To confirm, price must close above the top of the scallop for an upward breakout. Although downward breakouts do occur, I suggest you ignore them. The other two patterns are strange-looking but fine as inverted scallops.

Statistics

Table 58.2 shows general statistics for the ascending and inverted scallop.

Number found. I found a massive 2,191 scallops swimming in 483 stocks with the first caught in December 1991 and the most recent in December 2019. Not all stocks covered the entire period, and some no longer trade. Although I catalogued downward breakouts in both bull and bear markets, they were too few to present here.

Reversal (R), continuation (C) occurrence. Most scallops behaved as continuations of the prevailing price trend. About a third (31% in bull markets and 38% in bear markets) acted as reversals.

Reversal/continuation performance. Scallops acting as reversals performed better than did those acting as continuations, especially in bear markets. You might want to keep this in mind to give yourself a trading edge.

Average rise. The ascending and inverted scallop is a bullish pattern. Scallops in bull markets perform almost twice as well as bear market ones, even though both have upward breakouts.

Standard & Poor's 500 change. In bull markets, the S&P 500 index climbed an average of 13%. This figure compares to an average rise of 45% for scallops over the same period. The strongly bullish market may be responsible for the large average rise of scallops.

Table 58.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,776	290
Reversal (R), continuation (C) occurrence	31% R, 69% C	38% R, 62% C
Reversal, continuation performance	47% R, 45% C	32% R, 26% C
Average rise	45%	28%
Standard & Poor's 500 change	13%	–2%
Days to ultimate high	264	102
How many change trend?	62%	56%

In bear markets, the index declined 2% compared with a rise of 28% for inverted scallops. The market probably held down scallop performance in individual stocks.

Days to ultimate high. How long did it take price to reach the ultimate high? In bull markets, the rise took 9 months. In bear markets, it took less than half that, or about 3.5 months. If you crunch the numbers, the rise in bear markets is 60% faster than the one in bull markets. Fasten your seatbelt. Giddyap.

How many change trend? This row is a count of how many scallops see price rise more than 20% after the breakout. I consider values over 50% to be superb, and both bull and bear markets beat that benchmark. It suggests that price trends after the breakout, but there's no guarantee of that.

Table 58.3 shows failure rates for ascending and inverted scallops displayed as a frequency distribution of gains. For example, if your cost of trading is 5%, what I call the breakeven failure rate, how many scallops fail to see price rise more than 5%? Answer: 9%.

How many fail to see price rise over 25%? About half (46% in bull markets and 58% in bear markets). Notice that bull market failures are fewer than bear market ones (they diverge at a 15% maximum rise).

Like other chart patterns, notice how the failure rates start small and rise quickly. They more than double from 9% to 21% as the maximum price rise changes from 5% to 10%.

The key to trading chart patterns is to find a pattern with a low failure rate and high average rise. That way you stand a better chance of making a profit at lower risk.

Table 58.4 shows breakout-related statistics.

Table 58.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	168 or 9%	26 or 9%
10	211 or 21%	34 or 21%
15	166 or 31%	38 or 34%
20	135 or 38%	29 or 44%
25	138 or 46%	41 or 58%
30	109 or 52%	32 or 69%
35	106 or 58%	15 or 74%
50	207 or 70%	30 or 84%
75	210 or 82%	28 or 94%
Over 75	326 or 100%	17 or 100%

Table 58.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	95% up	91% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 41%, M 50%, H 44%	L 32%*, M 29%, H 27%
Throwbacks occurrence	66%	67%
Average time to throwback peaks	6% in 7 days	8% in 6 days
Average time to throwback ends	13 days	12 days
Average rise for patterns with throwbacks	43%	26%
Average rise for patterns without throwbacks	49%	32%
Percentage price resumes trend	79%	75%
Performance with breakout day gap	47%	26%
Performance without breakout day gap	45%	29%
Average gap size	$0.56	$0.41

* Fewer than 30 samples.

Breakout direction. As the table shows, almost all of the patterns have upward breakouts. Those with downward breakouts were too few to catalog, as I mentioned.

Yearly position, performance. The best performance comes from scallops breaking out in the middle of the yearly price range, especially if you ignore the low-sample-count bear market value.

Throwbacks. Throwbacks occur in two-thirds of the trades. When they do occur, it takes a stock 12 or 13 days, on average, to return to the breakout price.

When a scallop throws back, performance suffers. For example, scallops with throwbacks in bull markets have rises that average 43%. Without a throwback, the rise averages 49%. This trend is typical for

chart pattern types, as if a throwback robs upward momentum and performance suffers.

Once a throwback completes, the stock resumes rising about 75% of the time. If you hold onto a stock during a throwback, it will often recover and grow up to achieve great things.

Gaps. Breakout day gaps improve performance in bull markets, but hurt it in bear markets. It always bothers me when the two markets contradict each other like you see in the table. I will say that most of the time, a gap helps performance (in most chart pattern types). Not only that, but because I used the opening price the day after the gap appears, you can buy into the situation and participate in the better performance.

Table 58.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones. To calculate this for your scallop, compute the height of the pattern from highest high to lowest low. Divide the height by the breakout price and compare the result to the median in the table. If your value is larger than the median, then you have a tall pattern and it's party time.

Width. Narrow patterns perform better in bear markets, but show no performance difference in bull markets. I used the median length to determine whether a scallop was narrow or wide.

Height and width combinations. These results are weird because in bear markets, tall scallops outperform and narrow ones outperform, but the combination of tall and narrow places second for performance.

Table 58.6 shows volume-related statistics.

Table 58.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	47%	31%
Short pattern performance	43%	26%
Median height as a percentage of breakout price	17.4%	21.4%
Narrow pattern performance	45%	30%
Wide pattern performance	45%	27%
Median width	37 days	33 days
Short and narrow performance	42%	29%
Short and wide performance	46%	17%
Tall and wide performance	45%	32%
Tall and narrow performance	51%	30%

Table 58.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	70% down	69% down
Rising volume trend performance	48%	29%
Falling volume trend performance	44%	28%
Heavy breakout volume performance	46%	28%
Light breakout volume performance	44%	31%

Volume trend. I used linear regression to prove volume trends downward across the scallop pattern. Don't throw out a scallop because it has an upward price trend, however. Why?

Rising/Falling volume. Answer: Patterns with a rising volume trend do better after the breakout than do those with a falling volume trend.

Breakout day volume. The effect of breakout volume on performance is mixed, depending on the market conditions. Consult the table for more information and tell 'em Tom sent you.

Table 58.7 shows how often price returned to one of three locations in the scallop as price climbed to the ultimate high.

If you were to place a stop at the top of the pattern, you'd likely be taken out of the trade. Place it at the bottom of the scallop and you'd probably be safe, but if not, your spouse might ask, “Where's the money, Honey?” In other words, make sure to change a potential loss into a percentage of the current price to see how upset your spouse will be if you have a losing trade.

Table 58.8 shows the performance over three decades. The table and statistics don't include bear markets because they only happened in the 2000s.

Performance over time. The 2000s showed the best performance and the 2010s the worst. The results make me wonder if the 2020s will show even worse performance. Any ideas?

Failures over time. Failures increased steadily from the 1990s, which doesn't bode well for the 2020s if the trend continues.

Table 58.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	77%	76%
Middle	15%	11%
Pattern bottom	2%	1%

Table 58.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	43%
2000s	54%
2010s	38%
Performance (above), Failures (below)	
1990s	7%
2000s	9%
2010s	12%

Table 58.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	297 or 17%	47 or 16%
Single bust count	178 or 60%	35 or 74%
Double bust count	82 or 28%	10 or 21%
Triple+ bust count	37 or 12%	2 or 4%
Performance for all busted patterns	–15%	–19%
Single busted performance	–21%	–24%
Non-busted performance	–15%	–20%*

* Fewer than 30 samples.

Table 58.9 shows busted pattern performance. I'm not thrilled about upward breakouts which bust. The downward move isn't as mouthwatering as a busted downward breakout (for other chart pattern types) that sees price soar 50% or more on average.

Busted patterns count. Comparatively few patterns bust (which is good news).

Busted occurrence. Of those patterns that bust, the vast majority are single busts with double busts coming in a distant second. That trend may sound obvious, but with some patterns, double busts place third.

Busted and non-busted performance. The last three lines in the table compare the performance of busted patterns with non-busted ones. Single busted patterns almost always beat the other two combinations, and that's what we see here. The problem with trying to take advantage of this finding is that you have to pick a pattern that single busts. There's a good chance you will according to the upper portion of the table, but it's not a sure thing.

Trading Tactics

Table 58.10 shows trading tactics.

Measure rule, targets. Use the measure rule to find a price target. Figure 58.6 shows an example. Compute the formation height by subtracting the scallop low (point A) from its high (E). Add the difference to the high (E) to get the target price.

In this example, the pattern low is at 3.27, and the high is at 4.61. The difference between the high and low gives the pattern height, or 1.34. Add the height to the high price to get the target: 5.95. Price climbs to that point in mid-March.

The bottom portion of the table shows how often the measure rule works. In the example cited above, the stock is in a bull market and we used the full height in the computation. The table says the method will work 64% of the time on average.

Table 58.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Used to find a target price. Take the difference between the scallop's high and low. Add this difference to the scallop's high. The result is the target price. The bottom portion of the table shows how often price reaches the target using various heights in the calculation.
Search for nearby support and resistance	Trendlines, chart pattern boundaries, minor highs and minor lows, round numbers, and horizontal consolidation regions all contribute to support and resistance zones. Gaps? Not so much.
Wait for confirmation	Buy only after price closes above the pattern's high.
Stop location	See Table 58.7 for guidance.
Series height and width	Scallops may signal the end of an uptrend if their shape gets shorter or narrower.

Description	Bull Market	Bear Market
Percentage reaching half height target	81%	76%
Percentage reaching full height target	64%	53%
Percentage reaching 2× height	42%	22%
Percentage reaching 3× height	29%	8%

For a higher success rate, cut the height in half and add it to the price at E. The stock should reach the target 81% of the time, but if you were to sell there, you'd earn less profit than if you sold at the full-height target.

Once you know the location of the target, convert the distance into a percentage of the price and see if Table 58.3 makes you gasp. For example, if the target is $5 away in a scallop with a $50 current price, that's a 10% move. Table 58.3 says that in bear markets 21% of scallops will fail to see price rise 10%. So you have a 79% chance of the price making at least 10%.

Search for nearby support and resistance. Underlying support protects your position in case the trade goes wrong. If price closes below the right pattern low, sell (below point B in Figure 58.6). The Sample Trade discusses trendline support, but you should also look for other types of support.

Overhead resistance is one of the main reasons I avoid a trade. If there is a solid block of price forming a ceiling on the trade, I will look for another situation with better prospects. In diving board or cloud bank patterns, however, overhead resistance becomes the target because it's often far above the current price.

Wait for confirmation. Always wait for the pattern to become valid. That happens when price closes above the pattern's high, and that is also the buy signal.

Stop location. Table 58.7 shows how often price snags a stop-loss order on the way to finding the ultimate high. After price reaches the ultimate high, you're on your own.

Series height and width. Figures 58.3 and 58.5 show examples of how scallops get narrower and shorter as they appear in a rising price trend. These changes are not true of all inverted scallops in a single uptrend, but beware of investing in a narrow or short scallop because it may signal a coming trend change.

Sample Trade

Robert looked at the chart shown as **Figure 58.6** and liked the stock's rising price trend that started in April. He watched the first scallop form in September and October. The retrace of this pattern, ending at point A, was 83%—more than he liked, so he ignored the potential trade. “Big retraces suggest an especially weak technical picture, and scallops with large retraces tend to underperform.”

When the second scallop formed during late October through early December, the retrace was a more palatable 64%.

He ran though the identification guidelines in Table 58.1 and found the following: On the daily chart, the pattern was in a price uptrend, it looked like an inverted and backward J, the top looked rounded, and price did not drop below point A, the scallop's start. Meeting those guidelines qualified the pattern as an ascending and inverted scallop.

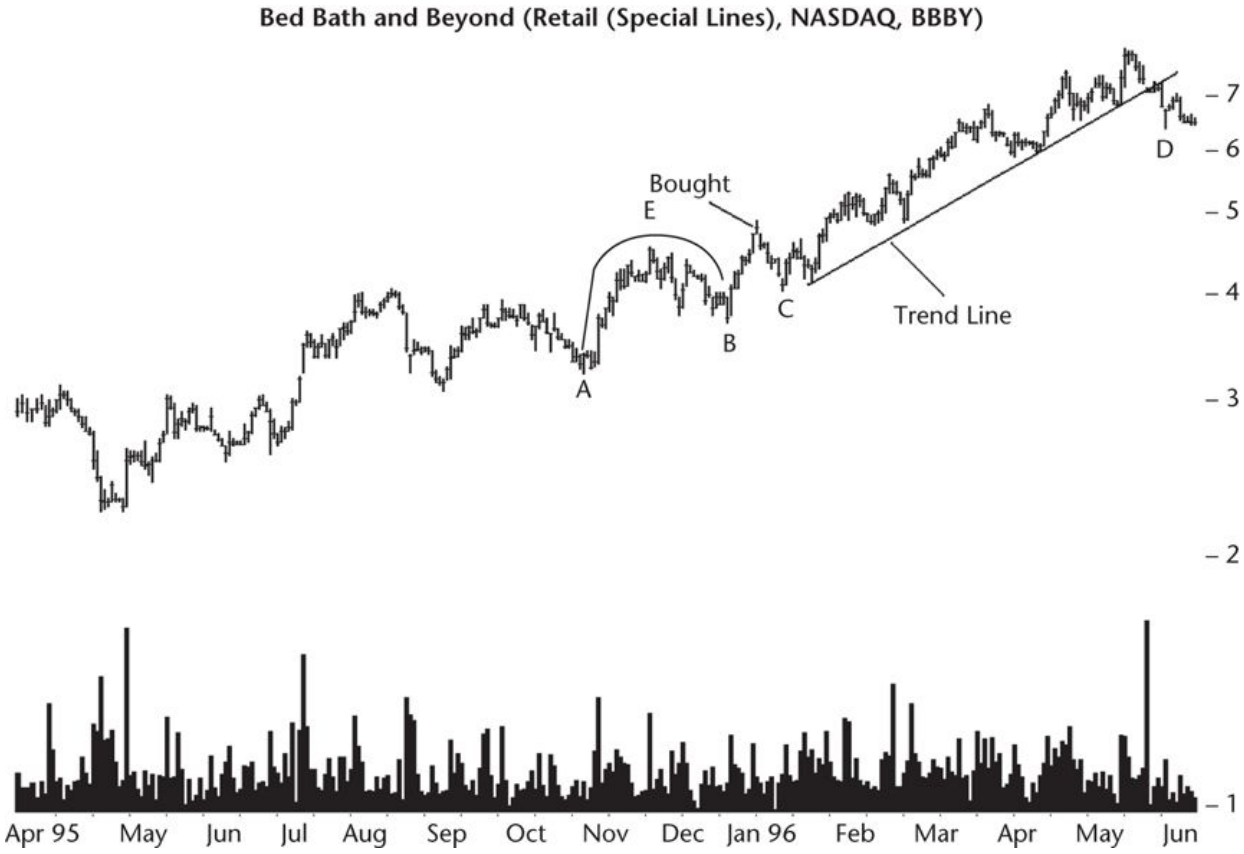


Figure 58.6 As described in the Sample Trade, Robert bought the day after the pattern confirmed and sold at point D after price pierced the trendline.

“The day after price closed above the scallop's high, I bought like a maniac. *Oops*.” Price tumbled. “But I'm an experienced trader, I know all about throwbacks, so I wasn't worried. Well, not too much.” Price threw back to C, above his stop (which was placed a nickel below point B), before rebounding.

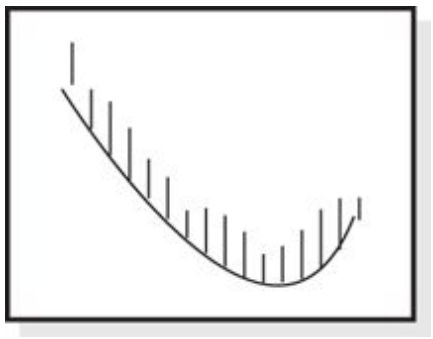
“I like to use trendlines as sell signals.” He drew a trendline from A to B and extended it upward (not shown). “Steep trends are short-lived, but the angle the stock was making didn't worry me.” He redrew the trendline (shown) as price climbed.

For fun, he computed the price target for the scallop, and it turned out to be 5.95. Price climbed through the target, pausing around 5, a round number and a common support and resistance zone, but eventually pushed through it.

Price kept bumping against the trendline without piercing it until early June. “Then it tumbled through the trendline with meaning. Combined with high volume a few days earlier, it was time to pull the ripcord.” He sold the following day (point D).

Robert bought at 4.90 and sold at 6.50 for a gain of 33% in about 5 months. From that point it took over a year for price to make a new high.

59
Scallops, Descending



RESULTS SNAPSHOT

Appearance: The price pattern looks like the letter J reversed.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	29 out of 39
Breakeven failure rate	14%
Average rise	39%
Volume trend	Downward
Throwbacks	67%
Percentage meeting price target	52%
See also	Head-and-shoulders bottoms, complex; rounding bottoms

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish continuation	Short-term bearish continuation
Performance rank	12 out of 36	6 out of 19
Breakeven failure rate	18%	7%
Average drop	16%	23%
Volume trend	Downward	Downward
Pullbacks	65%	61%
Percentage meeting price target	34%	33%

The classic definition of scallops refers to the ascending variety only, where you sometimes find repeated saucer-shaped patterns in a rising price trend. If there is an ascending variety, there is probably a descending variety. I decided to find out and searched for them.

Scallops may make a tasty meal, but as a chart pattern, they leave me hungry except in bear markets where the performance rank is sixth and failures are in the single digits. In bull markets, the failure rate is high and performance isn't great, either.

Let's take a closer look at descending scallops to see if anything smells fishy (did you notice how I worked that pun in?).

Tour

Figure 59.1 shows three examples of descending scallops. A downward price trend leads to the first scallop in September, the widest of the three. The scallop begins with the minor high in August (point A), drops to find support at C, and curves upward. On the right, the first minor high on the upward retrace marks the end of the pattern (B).

Descending scallops resemble the letter J reversed, with the end (B) approximately halfway up the distance to the start (A) in this example. For upward moves, a close above point B represents a breakout. For downward moves, a close below C, the lowest low in the pattern, is the breakout price.

The September and December scallops have upward breakouts, but the February scallop breaks out downward. Since the overall price trend is downward, notice how the upward breakouts stall as price bumps against an imaginary trendline (not shown) following the price peaks starting from the far left. The trendline acts as overhead resistance.

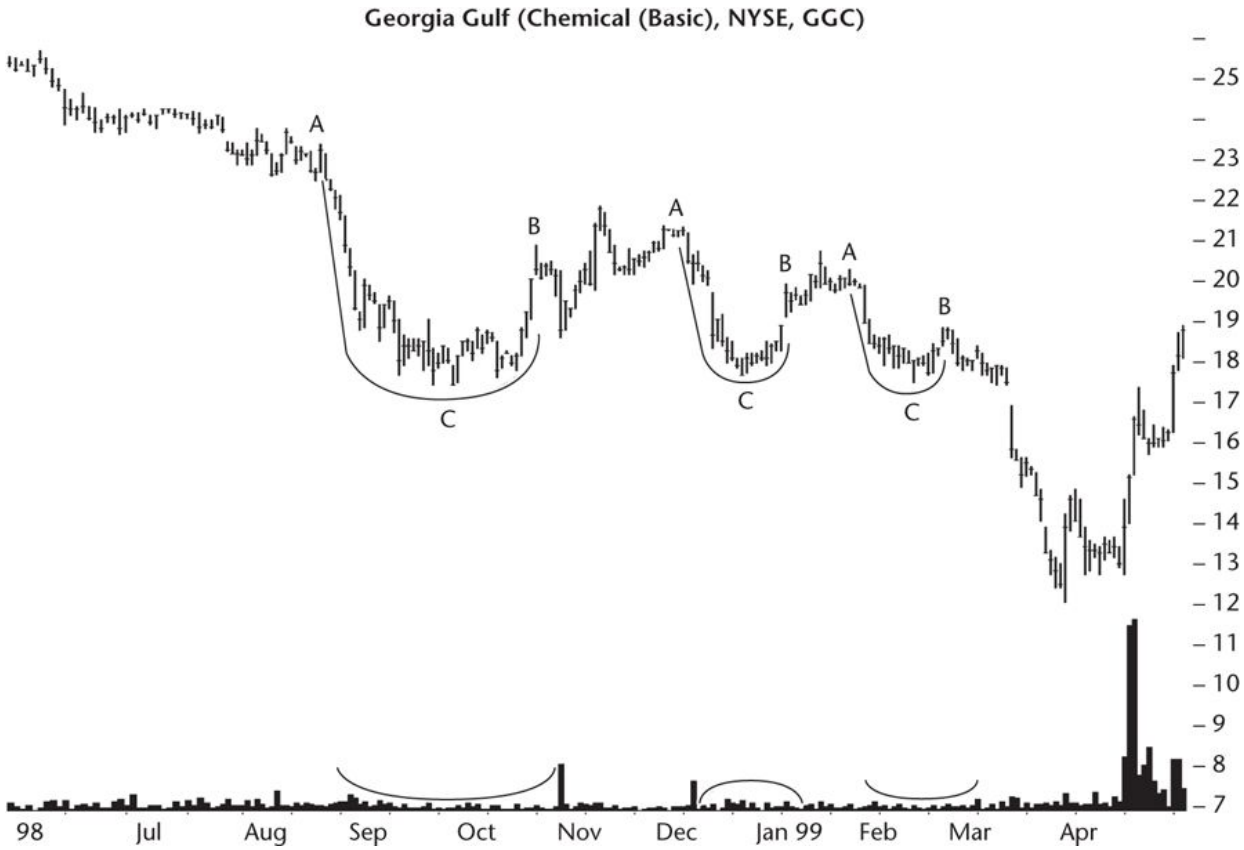


Figure 59.1 Three descending scallops appear in a declining price trend. Notice how they get narrower and shorter along the trend.

All three scallops rest on a pier of support at C. The scallop bottom is a common resistance zone. I say resistance because, for downward breakouts, price will push through the support zone, but a pullback attempt will often stall there, so underlying support turns into overhead resistance. In future up moves, price often stalls near the base of a scallop, so keep that in mind even if you do not trade these patterns.

Finally, notice how this threesome tends to get narrower and shorter as the decline proceeds. With descending scallops, this feature is not nearly as pronounced as it is for ascending scallops. By that, I mean sometimes you can determine the trend end by seeing if the scallop gets shorter and/or narrower as price moves along a trend. When the AB peaks are about equal in price, the trend end might be near.

Identification Guidelines

Table 59.1 shows the identification guidelines.

Appearance. Look for a reverse J shape, with the left side of the scallop higher than the right. The bowl at the bottom of the pattern should appear smooth and rounded, not excessively rough or V shaped. Allow variations. Tall but narrow scallops may look more V shaped than wider scallops, and often a price spike will poke out downward.

Table 59.1 Identification Guidelines

Characteristic	Discussion
Appearance	A reverse J shape with price much higher on the left side than on the right. The bowl should be a concave rounded turn.
Price trend	Look for a downward price trend leading to the scallop. Scallops do occur in uptrends, but that is rare.
Ends	The start and end of the pattern should not be near one another in price. The end (right peak) usually retraces 60% of the way up the left side.
Volume	Recedes. Don't discard a scallop because the volume trend is upward.
Breakout direction	Usually downward but can be upward, too. An upward breakout occurs when price closes above the right rim of the pattern. A downward breakout has a close below the bottom of the scallop.

Price trend. The descending scallops I looked at appeared in a downward price trend just over half the time. Since descending scallops work best as bearish patterns, avoid trading those in an uptrend.

Sometimes you will see a descending scallop form at the top of a long, upward price trend. It acts as a reversal when price breaks out downward. It may be worth trading; the Sample Trade explores one such trade.

Ends. The start and end of the pattern (point A and B in Figure 59.1) should be far apart in price. The usual retrace, C to B, of the A-to-C distance is 56%. In other words, price climbs 56% of the way to A from the bowl low. Since this number is an average (the median is the same), allow variations, but the key is to avoid scallops that look like bowls—two ends at nearly the same price.

Volume. I never exclude a scallop because of the volume trend, but it recedes from the left of the pattern to the right almost two-thirds of the time.

Breakout direction. A quick glance at Table 59.2 will tell you that scallops like to break out downward most often.

Figure 59.2 shows four descending scallops. You can see that the overall price trend is downward. It starts on the left at about 20 and saucers down to about 15. The descending scallops appear like reverse J patterns. The minor high on the right is below the minor high on the left, and between the two peaks is a rounded recession. You can see that the last scallop has minor highs that are nearly equal. This feature often suggests the declining price trend is nearing an end. In this case, price reaches the ultimate low in less than 2 months at 13.63, quite close to the last bowl low of 14.75.

The volume trend is irregular. I have noticed a tendency for a volume spike to appear near the center of the scallop as price switches from moving down to up. You can see the spikes in late March and mid-June.

Figure 59.2 Four consecutive descending scallops.

Focus on Failures

Descending scallops fail most often because of two other chart patterns: support and resistance. **Figure 59.3** shows the first example. The July scallop begins at A and ends at B. The bowl has a downward price spike, making the turn less smooth than I like to see (the word *yuck* comes to mind). Volume is dome shaped, which is typical for descending scallops.

After B, price moves down, and it looks like it will drop below the bowl low to breakout downward. Since price is declining leading to the scallop, down is the expected breakout direction. Instead, the stock closes above B at C and surprises with an upward breakout.

Price rises to the height of A and throws back to the price at B. Overhead resistance is the culprit. Numerous valleys touch the resistance line and a solid block of horizontal price movement adds strength to the zone in January to March.

As in most throwbacks, price recovers and attempts a new high that succeeds, but not by much. Overhead resistance is there to swat it down, and price drops below the pattern low. The rise from B to the resistance zone where price stalls measures 5%.

Figure 59.4 shows the second example of a failure, this time with a downward breakout. Price does not decline far before rebounding and eventually making a new yearly high at 113 (not shown).

Why did this descending scallop fail? The only explanation I can offer is hard to justify. There is meager support announced by the February low and the gap in December 1998. Below that, a small pennant also provides support but it looks to be too far below to matter.

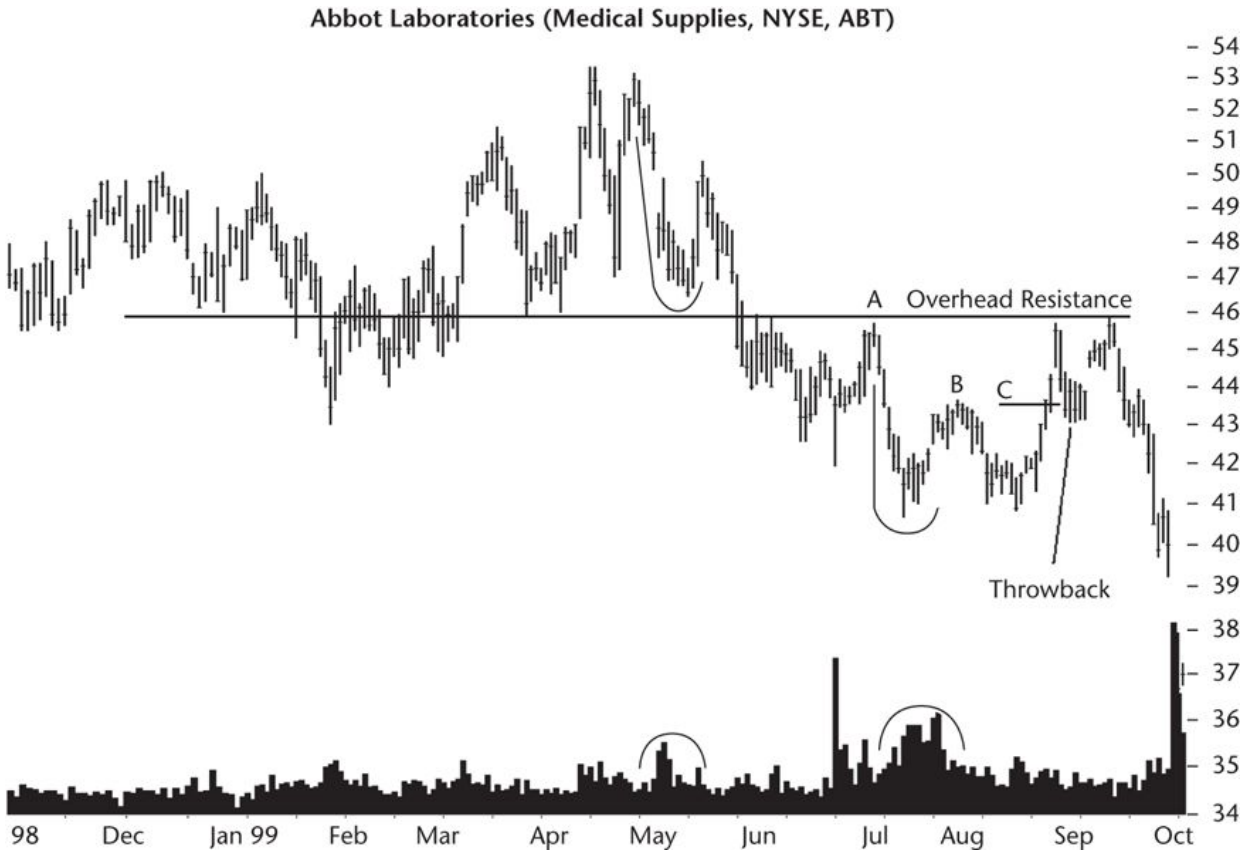


Figure 59.3 Overhead resistance causes the July scallop to stall and eventually price turns down. The rise measures just 5%.

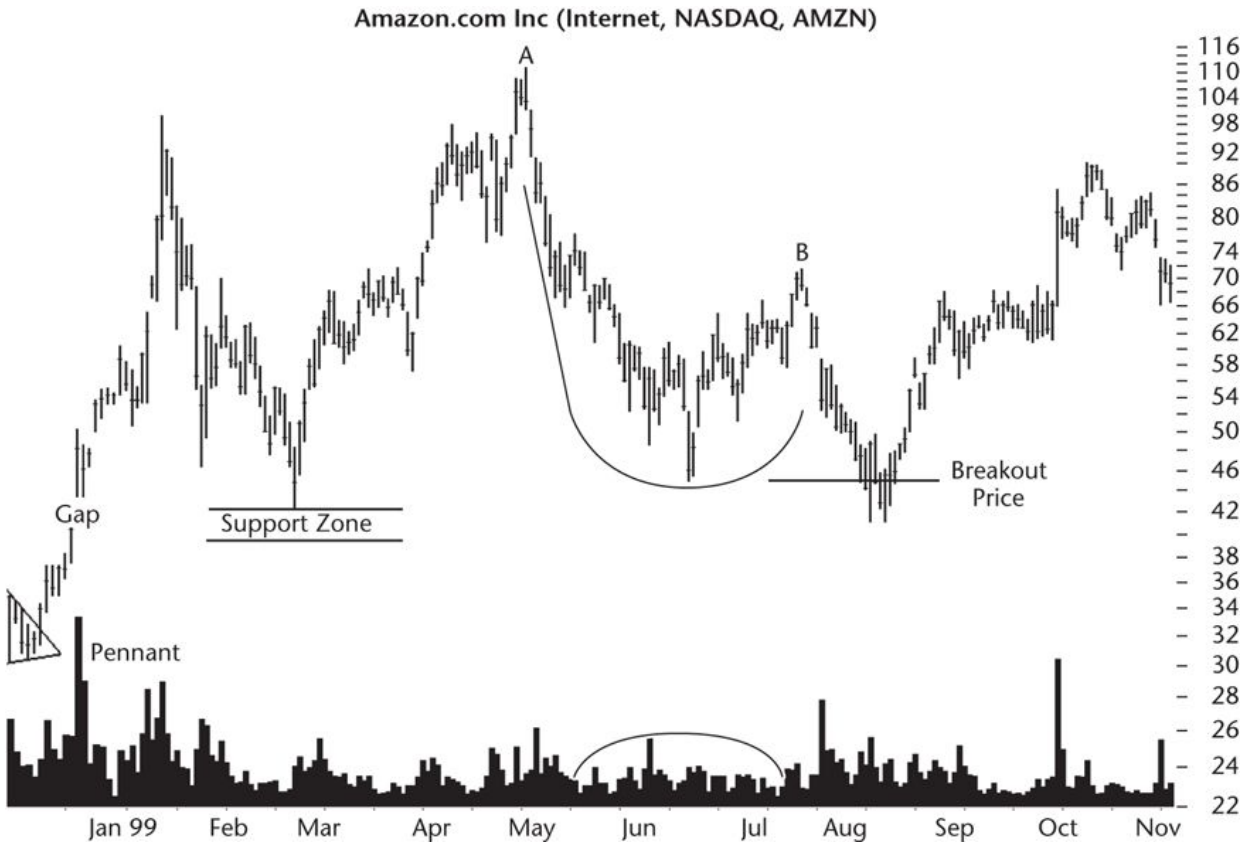


Figure 59.4 This scallop fails to descend far after a downward breakout. Notice the large price range.

If I were trading this stock and saw the downward breakout, I would believe that price would continue dropping. Perhaps the fundamentals explain the robust support that stopped the decline, but my records do not go back that far. Whatever the reason, proper use of stops would have saved a bundle when price climbed from a low of 41 in August to 113 in less than 5 months.

Statistics

Table 59.2 shows general statistics.

Number found. I found almost 3,000 scallops, but after removing downward breakouts in bear markets (which didn't meet the minimum number for this edition), I was left with the ones shown in the table. I trapped the first scallop in August 1991 and the most recent in December 2018, but not all stocks covered the entire period, and as an added bonus, some stocks no longer trade.

Reversal (R), continuation (C) occurrence. As the table shows, most scallops act as continuations of the downward price trend, but it's close to random (for downward breakouts). Reversals occur at the top of upward trends and during declines, whether at the bottom of the downtrend or in the middle as the corrective phase of a measured move down.

Reversal/continuation performance. Reversals perform better after upward breakouts in bull markets, and continuations do better after downward breakouts.

Table 59.2 General Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	448	1,597	633
Reversal (R), continuation (C) occurrence	60% R, 40% C	45% R, 55% C	45% R, 55% C
Reversal, continuation performance	41% R, 37% C	–15% R, –16% C	–22% R, –24% C
Average rise or decline	39%	–16%	–23%
Standard & Poor's 500 change	13%	–2%	–10%
Days to ultimate high or low	261	58	36
How many change trend?	52%	31%	54%

Average rise or decline. The average rise in bull markets is below the average for all chart pattern types, but the two downward breakout columns show better than average results.

Standard & Poor's 500 change. The 13% rise in bull markets by the index wasn't enough to carry the pattern's average rise to peak performance. The falling market assisted downward breakouts, especially the 10% drop in bear markets.

Days to ultimate high or low. Compare the 58 days it takes scallops in bull markets to drop 16% with the 36 days it takes scallops in bear markets to drop 23%. Without doing the math, you can guess that the bear market velocity must be higher than the bull market. Indeed, it's 2.3 times faster. If the bull market were a car doing 55 mph, the bear market would whiz by at 126 mph.

How many change trend? This is a count of how many scallops see price move more than 20% after the breakout. For upward

breakouts, values above 50% I consider good. However, the bear market downward breakout column shows the best performance of the group.

Table 59.3 shows failure rates for descending scallops. Of course, your eyes will search for the lowest rate in the table, and you will find it in the rightmost column: bear market, down breakout. Just 7% fail to see price drop more than 5%. This figure more than triples to 22% and posts a steep rise to 35% for declines measuring 10% and 15%, respectively.

Notice that for larger moves, over 20%, scallops with upward breakouts have lower failure rates.

What do the numbers mean? If you're courageous and experienced, trade this pattern in bear markets by shorting a stock. The table gives you a feel for how often a scallop will fail to cover your expenses and profit margin.

Table 59.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	63 or 14%	285 or 18%	45 or 7%
10	69 or 29%	351 or 40%	94 or 22%
15	45 or 40%	265 or 56%	82 or 35%
20	37 or 48%	201 or 69%	68 or 46%
25	30 or 54%	154 or 79%	86 or 59%
30	27 or 60%	133 or 87%	71 or 70%
35	22 or 65%	72 or 91%	53 or 79%
50	45 or 75%	115 or 99%	100 or 95%
75	40 or 84%	21 or 100%	33 or 100%
Over 75	70 or 100%	0 or 100%	1 or 100%

For example, if your trading expenses are 5% and you want to make 10% on each trade (15% total), then over a third (35%) of the scallops in bear markets will fail to decline more than 15%. Optimistically,

about two of every three trades will work on average, but that outcome depends on your trading skills and luck.

If the loss measures 10%, to offset the losing trade, your winners will have to make an average of 27%. As Table 59.3 shows, 70% of the scallops fail to drop more than 30% after a downward breakout in bear markets. That statistic suggests you will have a very difficult time making your profit margin consistently.

Table 59.4 shows breakout-related statistics.

Breakout direction. The vast majority of the breakouts will be downward.

Table 59.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	22% up	78% down	82% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 31%, M 39%, H 41%	L –17%, M –15%, H –14%	L –23%, M –24%, H –20%
Throwbacks/pullbacks occurrence	67%	65%	61%
Average time to throwback/pullback peaks	6% in 6 days	–7% in 6 days	–11% in 7 days
Average time to throwback/pullback ends	12 days	13 days	13 days
Average rise/decline for patterns with throwbacks/pullbacks	38%	–15%	–22%
Average rise/decline for patterns without throwbacks/pullbacks	41%	–18%	–26%
Percentage price resumes trend	74%	54%	51%
Performance with breakout day gap	49%	–17%	–23%
Performance without breakout day gap	36%	–16%	–23%
Average gap size	$0.61	$1.08	$1.23

Yearly position, performance. Score! The best statistic touches all three ranges. Upward breakouts show better performance if the breakout is within a third of the yearly high. Bear markets prefer the middle third of the range, and bull markets with downward breakouts like the lowest third. At least they are consistent in their inconsistency.

Throwbacks and pullbacks. Throwbacks and pullbacks occur about two-thirds of the time, and it takes between 12 and 13 days, on average, for the stock to return to the breakout price.

When a throwback or pullback occurs, performance suffers. That's typical. Look for nearby support or resistance to reduce the chance of a throwback or pullback.

If a throwback or pullback occurs, price resumes the breakout direction most often (but downward breakouts show the direction is almost random).

Gaps. Gaps help performance except in bear markets, and even in bull markets after a downward breakout, the performance difference isn't an event worth standing on your desk and shouting, “Oh, Captain, my Captain!” Don't get that reference? Watch the movie, *Dead Poets Society*.

Table 59.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones except in bull markets after upward breakouts.

To use this finding, measure the height of the pattern from the top to the bottom of the scallop and divide by the breakout price. If the result is greater than the median shown in the table, then you have a tall pattern.

Width. Scallop width doesn't give a performance edge worth trying to figure out how wide the pattern is.

Height and width combinations. Tall and narrow patterns show better performance in two of three columns. The opposite of that, short and wide, do best after upward breakouts in bull markets.

Table 59.6 shows volume-related statistics.

Volume trend. I used linear regression to determine the volume trend from the start to the end of the scallop.

Rising/Falling, heavy/light breakout day volume. Only upward breakouts in bull markets show much of a performance difference compared to the other two columns. Patterns with rising volume and heavy breakout volume do best under those conditions.

Table 59.7 shows how often price reaches a stop location. I removed upward breakouts because the results are inaccurate.

I measured the move from the breakout to the ultimate low and determined if price returned to the pattern during that move. If you placed a stop-loss order at the pattern's top after a downward breakout, the stock would hit the order 1% (or less) of the time. Stick the stop in the middle or bottom of the pattern and it'll be hit more often, but the potential loss will be smaller.

Don't forget to change the potential loss into a percentage of the current price to see if you can tolerate the hit to the trading account.

Table 59.5 Size Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	38%	–18%	–25%
Short pattern performance	41%	–14%	–22%
Median height as a percentage of breakout price	17.8%	18.4%	30.0%
Narrow pattern performance	39%	–16%	–24%
Wide pattern performance	39%	–16%	–23%
Median width	36 days	30 days	31 days
Short and narrow performance	40%	–14%	–22%
Short and wide performance	42%	–14%	–23%
Tall and wide performance	37%	–18%	–23%
Tall and narrow performance	38%	–19%	–27%

Table 59.6 Volume Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	57% down	63% down	66% down
Rising volume trend performance	43%	–16%	–23%
Falling volume trend performance	36%	–16%	–24%
Heavy breakout volume performance	40%	–16%	–24%
Light breakout volume performance	35%	–16%	–23%

Table 59.8 shows the performance over three decades.

Performance over time. The 2010s showed the best performance after upward breakouts, and performance has been improving each decade. Downward breakouts did well in the 1990s, but performance is erratic over time.

Table 59.7 How Often Stops Hit

Description	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	1%	0%
Middle	9%	5%
Pattern bottom	66%	64%
Right rim	9%	4%

Table 59.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	35%	–18%
2000s	41%	–13%
2010s	43%	–16%
Performance (above), Failures (below)		
1990s	14%	12%
2000s	11%	22%
2010s	16%	22%

Table 59.9 Busted Patterns

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	107 or 24%	491 or 31%	78 or 12%
Single bust count	61 or 57%	381 or 78%	50 or 64%
Double bust count	37 or 35%	13 or 3%	1 or 1%
Triple+ bust count	9 or 8%	97 or 20%	27 or 35%
Performance for all busted patterns	–14%	43%	23%
Single busted performance	–20%	54%	33%
Non-busted performance	–16%	39%	23%

Failures over time. Failures show the reverse, with upward breakouts having inconsistent results over time, but downward breakouts show fewer failures in the 1990s and steady failures since then.

Table 59.9 shows busted pattern performance.

Busted patterns count. The busted count is about what I'd expect from a scallop. If you consider that a busted pattern sees price move no more than 10% after the breakout, having 24% or 31% bust is alarming. Of course, price has to close opposite on the side of the breakout direction to bust a pattern (meaning a busted upward breakout sees price close below the bottom of the scallop).

Busted occurrence. Sorting the type of bust into one of three bins sees single busts happening most often. A single busted pattern is also where you'll get the best performance in the new direction.

Busted and non-busted performance. The table shows single busted patterns outperforming. Unfortunately, I haven't found a way to predict that a chart pattern will single bust. If you can figure it out, then you can make some money trading single busted patterns. Even if you can't figure it out, the single bust rate ranges from 57% to 78%, so the odds are on your side.

Trading Tactics

Table 59.10 shows trading tactics.

Table 59.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the scallop height by taking the difference between the highest high and lowest low in the pattern. Add the result to the right scallop peak for upward breakouts or subtract it from the lowest low for downward breakouts to get the target price. The bottom portion of the table shows how often the measure rule works.
Breakout	A close above the right lip high marks an upward breakout, and a close below the lowest low is a downward breakout.
Stop location	For upward breakouts, place the stop below the lowest low in the pattern. For downward breakouts, place the stop slightly above the right rim high. Move the stop as price advances. See Table 59.7 for guidance.
Trends	Trade with the market trend, especially downward breakouts in bear markets.

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	73%	63%	66%
Percentage reaching full height target	52%	34%	34%
Percentage reaching 2× height	34%	11%	13%
Percentage reaching 3× height	25%	4%	7%

Measure rule, targets. I wish I had good news for the measure rule, but it seldom works. The bottom portion of the table shows the

numbers, but only a third to a half of the scallops will hit their predicted targets based on the full height of the scallop.

Let me give you an example of how to use the measure rule. Figure 59.6 shows a descending scallop at the top of an upward price trend. It acts as a reversal. How far will price decline? Compute the formation height by subtracting the low near B (21.11) from the high at A (23.75), giving a height of 2.64. Since the breakout is downward, subtract the result from the low (B) to get a target of 18.47. Price reaches the target in late July.

If the breakout were upward, then you would add the height (2.64) to C, the right lip high (at 22.71), for a target of 25.35.

If you want to increase the chance of success, then cut the height in half and apply it to the equation. For downward breakouts, that would almost double the success rate.

Once you know the target, compute the distance to the target as a percentage of the current price and compare the results to Table 39.3. For example, if the distance to the target is 10 in a stock with a current (breakout) price of 50, that's a 20% move. Table 39.3 says that (in bull markets after upward breakouts) 48% of scallops will fail to see price rise more than 20%. That also means 52% will exceed a 20% rise. Should you take the trade? It's your money, so you decide.

Breakout. Upward breakouts use a close above the high on the right lip of the scallop (point C in Figure 59.5). Downward breakouts use a close below the lowest low in the pattern (B). Since the breakout direction is unknown ahead of time, do not trade a scallop until the breakout occurs unless you have a compelling reason for doing so.

Remember that the breakout direction usually follows the price trend leading to the pattern. For example, if price is trending down, expect a downward breakout. In a strong bear market, an upward breakout may falter.

Stop location. Since scallops perform so poorly, use a stop to protect any profits you may have and to limit losses. A good starting point for downward breakouts is to use point C (see Figure 59.5) as the stop point. For upward breakouts, use the formation low (B) as the stop-loss point.

Table 59.7 shows how often four locations work. Be sure to convert the potential loss into a percentage of the current price. Many consider a loss of 8% to be reasonable.

Place the stop a few cents below a minor low (for long trades), preferably on an oddball number (20.93 instead of 21, for example). Novice traders may use a round number to trade, so position your stop below them. They will be stopped out, and you'll have a better chance of remaining in your trade.

Sometimes, though, this strategy will cause a larger loss because of stop running (especially for thinly traded issues). That is when a stop causes price to decline, which trips additional stops, forcing price even lower. To avoid this pitfall, place your stop above the others, as in 21.07 instead of 21. That position also narrows your loss (for long trades) but increases the likelihood of it being triggered. Since stop running seldom occurs, I place my stop below round numbers.

Trends. Since descending scallops work best after downward breakouts in a declining price trend, short the stock only in bear markets. If you own the stock, ask yourself if you want to suffer through the average 23% decline. It may be wise to sell the stock and look for a more promising situation instead of riding out a decline.

Experience

Let me tell you about what I found in my trade review.

Gleason Corp.

Gleason Corp. (GLE), appears in **Figure 59.5**, but the candles look weird because I didn't have the opening price available back then.

After a short uptrend in the winter of 1998, a descending scallop completed at the start of the new year (E). Here's what I wrote in my notebook: “This feels good, but price will probably drop from where I bought today. Stop is 17.50, target is 23. Aroon is buy. MACD is buy, RSI is midrange heading up. Japan's economy is doing better, I think. Dollar is strong against yen, and that will help with 40% foreign sales. Machine tool orders will be weak, though, but expect upside earnings surprise in a few days.”

Figure 59.5 This trade ended in a loss.

I bought at B. Because I didn't know that price would form the right rim of the scallop on that day, I must have thought that the right rim ended with the peak at A. Price closed above A the day before B, allowing me to enter the stock after an upward breakout from the right rim.

What crummy timing. Why? Because the stock dropped (to D), just like I thought it might.

- Lesson: Sometimes listening to your intuition can prevent a losing trade (like me predicting a downward move).

I was stopped out at 17.50 (C), taking a 13% loss. I don't know when earnings were announced. It could have been a catalyst for the drop to D.

This trade worked as designed. I had a trading plan in place, and a stop-loss order (C) placed just below the bottom of the scallop got me out of a losing position. The stock continued down another 9% (to D) below my sale price over the next two days before moving sideways for a year.

- Lesson: Avoid taking a position in a stock within 3 weeks of an earnings announcement.

Titanium Metals

I took a position in Titanium Metals Corp. (TIE) in early 2011 just as a descending scallop was forming. Here's what I wrote: “24 March 2011. I like the tight base forming over the last week or two. This looks like a descending scallop. Boeing is selling more planes, which should help the stock, but that news hasn't had an effect. S&P rates this a sell because they think it's overvalued but expect the aerospace industry to grow in 2011. CEO Simmons has been buying since August 2010, big shares, too. Everyone (analyst reports) says that this company will do poorly going forward, but I like the chart. This is not a value play, but with sales increasing or likely to do so, I think this cyclical play will prosper.”

I took a small position in the stock near the bottom of the bowl and well before the right lip.

The stock cooperated … for a time. It climbed, formed the right scallop rim, retraced, and climbed 14% above my buy price less than 2 months after I bought.

After that, the stock went downhill.

At the end of the year, I reevaluated the stock and decided to capture the loss for taxes and sold the stock, taking a 13% loss. Two dividend payments helped cushion the blow along the way. “Sell reason: tax loss selling. This has gone nowhere all year in a choppy form, so I selected it for tax loss selling.”

- Lesson: I didn't appear to have a stop-loss order in place or even a viable trading plan. Placing a stop below the scallop bowl would have limited losses to 5%.
- Lesson: In both of these trades, I was hoping price would recover, but the bearish pattern (the majority of descending scallops break out downward, so it's bearish) carried price lower. Perhaps these trades are two examples of using incorrect tools for the job. Don't use a bearish pattern hoping for a bullish result.

Sample Trade

Figure 59.6 shows a sample trade for descending scallops. How would you trade the June scallop? The first thing you may notice is that it appears at the end of a long upward price trend. Thus, this scallop acts as a reversal. This fact does not become clear until price closes below point B, the lowest low in the pattern. When that happens, it signals a downward breakout and a trend change. That movement means shorting the stock (or selling shares you own) is a risky maneuver that should be left to serious traders and investors.

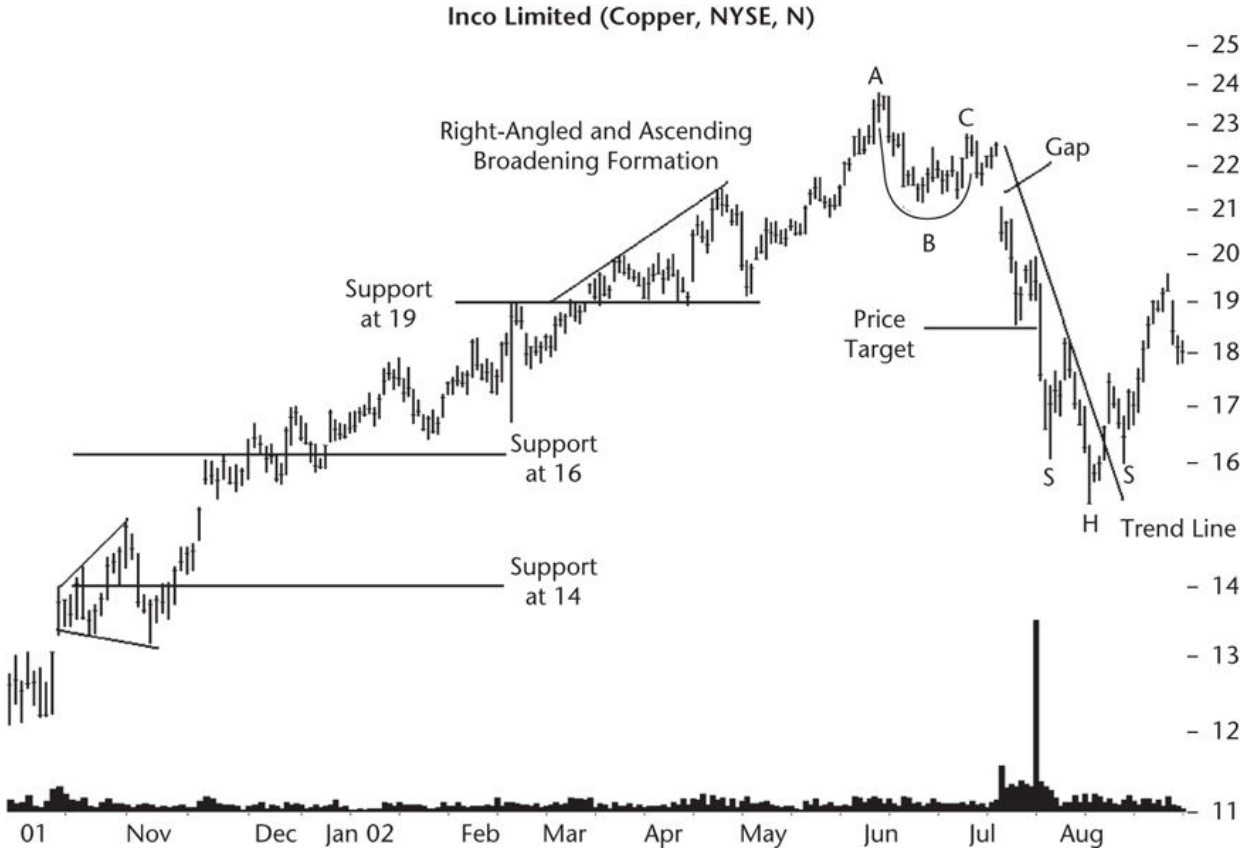


Figure 59.6 This descending scallop acts as a reversal of the upward price trend.

Before taking a position in the stock, use the measure rule to determine how far price will decline. I already discussed this in Trading Tactics, so refer to the measure rule discussion there for more information.

Look for support and resistance zones. Overhead resistance will probably occur at the old high (point A at 23.75), perhaps forming a

double top.

Support appears at 19, set up by the base of a right-angled and ascending broadening formation. If price pierces 19, then I would consider it likely to stall at 16. Although not shown in the figure, 16 is the price at which the decline stalled during the summer and fall of 2001. Additional support appears as a broadening top, centered near 14, and extending as far back as 1999.

Since the measure rule target (18.47) and support (at 19) are nearly the same price, that is where I would expect price to stop. If the market were also trending down during the trade, an additional decline to the next support zone (16) might be possible or even likely. A target below that might be a dream unless company fundamentals are in serious trouble.

With a breakout price of 21.11 and a target of 19, is a 10% decline worth trading, especially a risky short sale? I don't think so. Suppose price declines to 16, for a 24% loss. Now we are talking!

If fundamental analysis shows the market flooded with nickel, copper, cobalt, or precious metals, all of which Inco produces, then the oversupply should translate into a lower stock price. News such as that would give me confidence to short the stock.

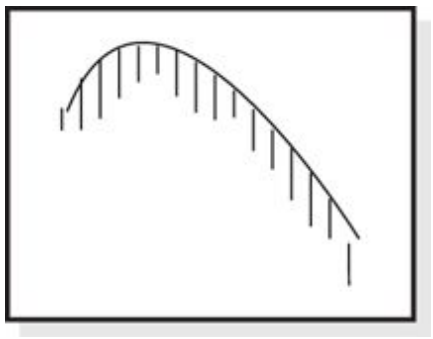
In the coming days, price drops. For short-term traders, consider covering the short once price nears support at 19 or the predicted target of 18.47. Many times, the decline won't reach the target, and it may be prudent to take your profits or tighten (lower) your stop. A lower stop allows you to capture more of your profit but still gives the stock room to drop farther.

If you put an order to cover the short at 18.47, you would have missed it because price declined to 18.52 before rebounding for a week. Patience would be rewarded, though, when price dropped through support and continued down, triggering the order.

The stock hit 16.05, pulled back to the price target, and then resumed the decline, making a lower low. Drawing a down trendline connecting the minor highs would give a timely cover signal. If you missed that signal, a retest of the low at 16 in early August was another one. Since the minor low did not make a lower low, that suggested a trend change.

The price pattern takes the shape of a head-and-shoulders bottom (the S-H-S pattern in July and August), suggesting higher prices ahead and time to cover the short. If the order was covered at say, 17, that would give a return of nearly 17% in about a month.

60
Scallops, Descending and Inverted



RESULTS SNAPSHOT

Appearance: Looks like an upside-down J.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish reversal
Performance rank	9 out of 39
Breakeven failure rate	16%
Average rise	47%
Volume trend	Upward
Throwbacks	58%
Percentage meeting price target	62%

Downward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Short-term bearish continuation	Short-term bearish continuation
Performance rank	10 out of 36	13 out of 19
Breakeven failure rate	17%	10%
Average drop	16%	22%
Volume trend	Upward	Upward
Pullbacks	66%	61%
Percentage meeting price target	29%	23%

This chapter completes the four scallop variations: ascending, descending, and their inverted counterparts. The descending and inverted scallop looks like an upside-down J, and price typically reaches the ultimate low in less than 2 months. It is a bearish pattern, meaning that price breaks out downward most often and continues lower.

As if this pattern wore glasses, the pattern has trouble seeing the price target, with less than a third finding the bull's-eye. The low success rate suggests price may not decline nearly as far as you hope.

When several scallops appear in the same downward price trend in a bull market, the scallops tend to get narrower and shorter as they appear over time. Thus, if you are considering trading a narrow or short scallop that appears after price has been trending down, do so with caution. The scallop may signal an approaching trend change.

Tour

What does a descending and inverted scallop look like? **Figure 60.1** shows a typical example. Price leading to the pattern trends downward and then bumps up (from A to B) and rounds over, forming an inverted bowl. After that, price drops, usually in a sharp, straight-line decline like that shown from B to C.

At the end of the pattern (point C), price retraces upward, forming a sort of hook (point D; think of a soup ladle upside-down). The breakout occurs in this scallop when price closes below the lowest low in the pattern. After the breakout, price continues down.

Scallop identification is not difficult, but what should you look for?

Figure 60.1 A descending and inverted scallop appears as an upside-down J.

Identification Guidelines

Table 60.1 shows identification guidelines for the scallop pattern.

Appearance. The pattern resembles an inverted J with the pattern start (point A) higher in price than the end (point C). Half the patterns are about a month wide; I know you've been wondering about that.

Price trend. Look for a downward price trend leading to the scallop. Occasionally, but rarely, you will find scallops dangling at the end of a rising price trend.

Smooth top. The top of the pattern should be a convex rounded-looking turn, although sometimes you have to use your imagination. I did not include inverted V-shaped scallops where the turn was too pointed.

End points. You are going to have a problem with end points. I did. Look at Figure 60.2. Where does the scallop start: at minor low A or B? Where does it end, at C or D? I chose the inner points, B and C, as the ends for my study of scallops. In a few cases, I used the outer points, A and D, when I wanted to hook a large scallop. In such a case, the BC scallop was not as well defined as the one shown in the figure. I used the nearest price turning point (minor lows) to mark the ends.

Table 60.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price moves up and then rounds over at the top and tumbles, forming an inverted J shape.
Price trend	Most scallops appear in a downward price trend or at bearish turning points.
Smooth top	Look for daily high prices that, when connected, form a smooth turn. Larger patterns may not be as smooth because you are connecting minor highs. Allow variations.
End points	Look for the scallop's end to be below the start. Both the start and end should form at turning points (minor lows).
Proportion	The width of the scallop should be proportional to its height. Avoid selecting scallops with narrow turns followed by large declines, or the reverse.
Breakout direction	Can be upward or downward but most often is downward. A breakout occurs when price closes above the top or below the bottom of the pattern.

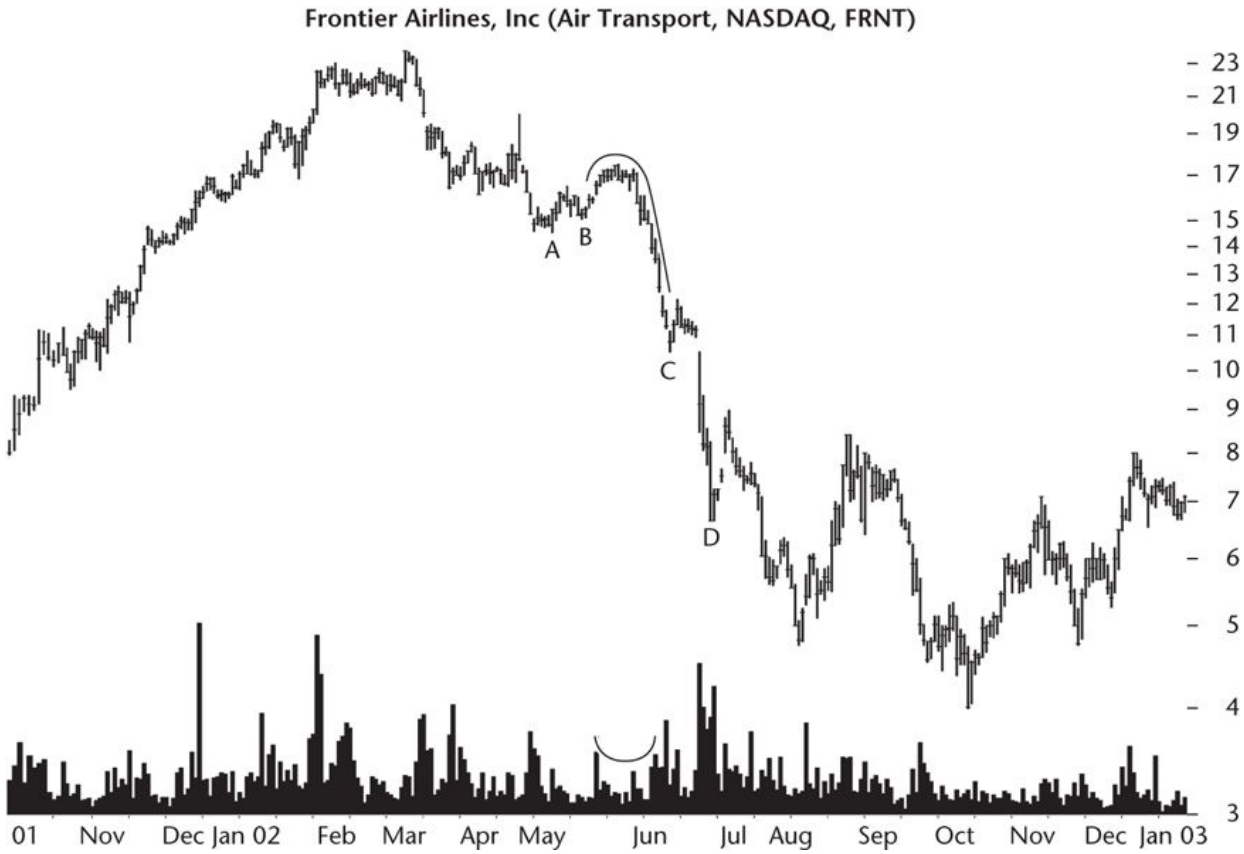


Figure 60.2 B and C mark the beginning and end of the scallop, not A or D.

Proportion. The pattern should look proportional, meaning that the inverted bowl at the top should be sized to the height of the pattern. Do not pair a wide bowl with a meager decline. Use the figures in this chapter as guides. For example, the CD pattern isn't a valid descending and inverted scallop because the turn near C is too narrow (and too pointed) for the drop to D.

Breakout direction. The breakout can be in any direction, but most times it will be downward. That's because price ends the pattern near the bottom, making it easier for it to close lower.

Focus on Failures

Why do scallops fail to perform as expected? Most problems occur with identification. **Figure 60.3** shows an identification failure at turn ADB. The pattern's ends (AB) should make the scallop look like an inverted J. Does the scallop shown in the figure portray this feature? No. Point A is too close to the price of B, making it look like an inverted U, not a J.

This illustration also brings up the question of where the pattern starts. If you chose C as the starting point, then the pattern is clearly wrong, because C is below B. Choosing A as the first turning point puts the start slightly above B, but still not far enough.

Suppose that A and B are fine. Look at the width compared to the height. The decline from D to B is not proportional to the width. In other words, a pattern this wide should have a longer decline.

In the patterns I looked at, the average decline from D to B is twice the distance from D to A. That is a guideline to keep in mind.

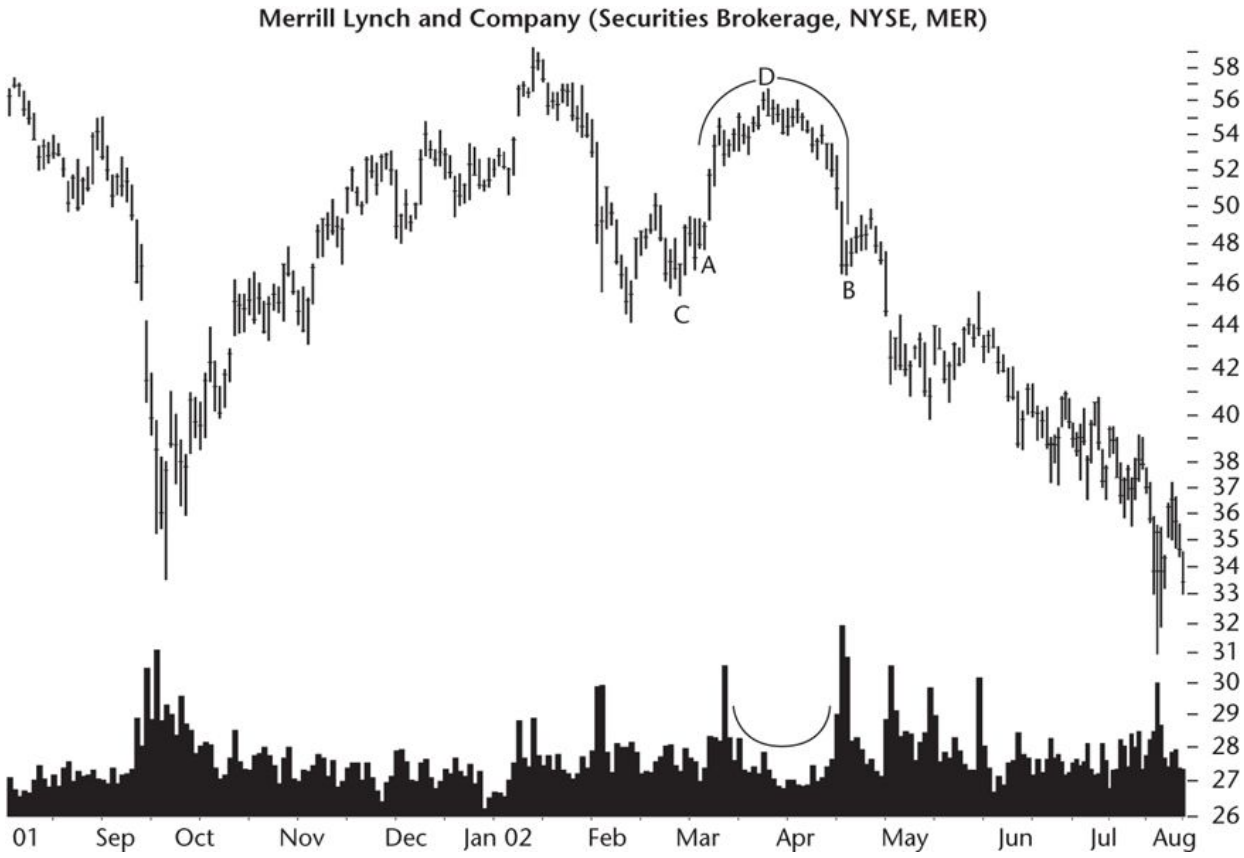


Figure 60.3 A pattern failure: Price at A should be well above B.

Statistics

Table 60.2 shows general statistics for scallops.

Number found. I counted 2,150 scallops in 505 stocks with the first hooked in August 1991 and the most recent in December 2018. Not all stocks covered the entire period and some stocks no longer trade.

Because patterns in bear markets with upward breakouts were few, I removed them from the tables. Most of the time, you'll find this pattern in bull markets with downward breakouts.

Reversal (R), continuation (C) occurrence. Downward breakouts acted as continuation patterns most often (price continued trending lower). Upward breakouts were reversals of the downward price trend.

Reversal/continuation performance. Upward breakouts show reversals outperforming and downward breakouts have continuations doing better.

Average rise or decline. The average rise or decline appears in the table. The best performance rank is ninth (which is quite good) and that's for upward breakouts in bull markets. Even though downward breakouts happen most often (performance rank: tenth, also good), price doesn't drop that far after a breakout on average.

Standard & Poor's 500 change. The general market move highlights its influence on individual stocks. In other words, if a rising tide lifts all boats, the 15% move in the index contributed to the 47% rise in bull markets.

Similarly, the 10% drop in the index helped price in bear markets take the stock lower. I can't prove those statements are true, but I have seen research that shows the influence of the market on stock behavior and I've also tracked my own. I do best when trading with the market trend instead of against it.

Table 60.2 General Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	477	1,118	452
Reversal (R), continuation (C) occurrence	69% R, 31% C	21% R, 79% C	15% R, 85% C
Reversal, continuation performance	49% R, 44% C	–15% R, –16% C	–20% R, –22% C
Average rise or decline	47%	–16%	–22%
Standard & Poor's 500 change	15%	–2%	–10%
Days to ultimate high or low	331	56	31
How many change trend?	58%	29%	47%

Days to ultimate high or low. For downward breakouts, does price fall faster in bear markets than in bull ones? Yes. In fact price drops 2.5 times as fast in bear markets. So maybe this is proof of the market's influence on individual stocks.

How many change trend? This is a measure, a count really, of how many scallops see price move more than 20% after the breakout (on the way to the ultimate high or low). I consider values above 50% for upward breakouts to be yummy for your tummy. In bear markets, downward breakouts come close, at 47%, so that's a jolly good showing, too.

Table 60.3 shows failure rates for descending and inverted scallops. The failure rate in bear markets is the lowest of the three columns, so let's talk about it.

I found that 10% of the patterns failed to see price drop more than 5% after the breakout. The failure rate more than doubles for drops of

10%, meaning 25% of patterns failed to see price drop more than 10%.

You can see how the failure rate rises for small changes in the maximum price rise or decline.

This table is quite useful as a tool to check expectations. If you trade a scallop and hope for a large decline, say 50%, less than 5% will make that kind of a drop after a downward breakout (95% to 99% will fail to drop more than 50%).

Table 60.4 shows breakout-related statistics.

Breakout direction. As I mentioned, most of the breakouts from scallops are downward. A breakout occurs when price closes below the bottom of the scallop. An upward breakout sees price close above the top of the scallop, and because the pattern is so tall, that's rare. Also, price ends the pattern near the bottom anyway, making a downward breakout more likely.

Table 60.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	75 or 16%	185 or 17%	43 or 10%
10	50 or 26%	245 or 38%	68 or 25%
15	43 or 35%	210 or 57%	63 or 38%
20	30 or 42%	152 or 71%	66 or 53%
25	30 or 48%	112 or 81%	48 or 64%
30	27 or 53%	92 or 89%	43 or 73%
35	26 or 59%	49 or 93%	30 or 80%
50	48 or 69%	58 or 99%	68 or 95%
75	54 or 80%	15 or 100%	20 or 99%
Over 75	94 or 100%	0 or 100%	3 or 100%

Table 60.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	30% up	70% down	81% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 47%, M 41%, H 50%	L –16%, M –15%, H –13%	L –22%, M –22%, H –20%
Throwbacks/pullbacks occurrence	58%	66%	61%
Average time to throwback/pullback peaks	5% in 7 days	–7% in 6 days	–12% in 6 days
Average time to throwback/pullback ends	12 days	12 days	11 days
Average rise/decline for patterns with throwbacks/pullbacks	46%	–16%	–21%
Average rise/decline for patterns without throwbacks/pullbacks	49%	–16%	–24%
Percentage price resumes trend	82%	57%	45%
Performance with breakout day gap	49%	–16%	–23%
Performance without breakout day gap	47%	–16%	–22%
Average gap size	$1.56	$0.74	$1.07

Yearly position, performance. Mapping the performance according to where the breakout occurred in the yearly price range showed that the best performers in bull markets were within a third of the yearly high. Downward breakouts (bull markets) preferred the yearly low. In bear markets, stocks performed better if they were *not* near the yearly high.

Throwbacks and pullbacks. As I'm writing this book, I get a sense of the numbers for pattern behavior. I know that throwbacks and pullbacks happen about two-thirds of the time. Scallops deviate from that somewhat as the table shows.

It usually takes 11 or 12 days to make a round-trip during a throwback or pullback (to return to the breakout price), and half that time to reach the apex of its turn on average. Downward breakouts in bear markets make an aggressive push downward, falling 12% in 6 days (which is very unusual because it's so large). That's based on 274 patterns, so the sample count is high (good), too.

If a throwback or pullback appears, performance usually suffers. However, downward breakouts in bull markets don't see any performance difference.

After a throwback or pullback completes, price resumes moving in the breakout direction most of the time, with the exception being downward breakouts in bear markets. Those see price rise 55% of the time (only 45% continue lower).

Gaps. Scallops show mixed results as far as breakout day gaps are concerned. They lean toward gaps helping performance (two out of three columns support this).

If you want to participate in better gap performance, then you're in luck. I measured performance using the opening price the day *after* the gap (to the ultimate high or low), so you can buy in and enjoy the ride, hopefully, to larger profit, even though you missed owning the stock during the gap.

Table 60.5 shows pattern size statistics.

Height. Tall scallops perform better than short ones across all three columns. Height is one of the most reliable predictors of future performance. To use this finding, measure the scallop's height and divide it by the breakout price. Then compare the result against the median listed in the table. Values above the median are tall patterns.

Table 60.5 Size Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	52%	–16%	–23%
Short pattern performance	43%	–15%	–21%
Median height as a percentage of breakout price	15.5%	21.1%	37.7%
Narrow pattern performance	43%	–16%	–22%
Wide pattern performance	52%	–15%	–23%
Median width	36 days	29 days	35 days
Short and narrow performance	41%	–16%	–20%
Short and wide performance	46%	–13%	–21%
Tall and wide performance	55%	–16%	–23%
Tall and narrow performance	46%	–17%	–24%

Width. Performance improves for wide scallops, but it varies with breakout directions and market conditions. Width is not as good a performance indicator as height.

Height and width combinations. The best (and worst) performance varies depending on the height and width of the pattern, so consult the table. The combinations of height and width usually track the individual traits but not always. By that, I mean we see that tall patterns work best in bull markets after upward breakouts, and wide patterns also work best.

The combination of a tall and wide pattern does, indeed, give us the best performance. But you can't say that for downward breakouts in bear markets. Tall and wide patterns should perform best, but they come in second to tall and narrow patterns.

What can we learn about scallops by observing volume? Table 60.6 shows some answers.

Volume trend. Most chart pattern types will see receding volume across the pattern but there are exceptions, like scallops. They see volume trending upward most often. Does it matter? Only in bull markets after upward breakouts.

Rising/Falling volume, breakout day volume. Patterns with a rising volume trend in bull markets after upward breakouts see price rise an average of 50%. If breakout volume is heavy (above average), you'll see better performance, too. The other two columns don't seem to care much about volume.

Table 60.7 shows how often price reaches a stop location. Let's use the bull market, up breakout column as an example. If you place a stop at the top of the scallop, price on the way to the ultimate high will trigger the stop 80% of the time on average.

Tuck at the stop at the bottom of the pattern and price will trip it just 3% of the time. You read the other two columns the same way.

Table 60.6 Volume Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	73% up	69% up	75% up
Rising volume trend performance	50%	–16%	–22%
Falling volume trend performance	41%	–16%	–22%
Heavy breakout volume performance	48%	–16%	–22%
Light breakout volume performance	45%	–15%	–21%

Table 60.7 How Often Stops Hit

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	80%	1%	0%
Middle	18%	11%	6%
Pattern bottom	3%	74%	65%
Left rim	17%	16%	8%

Table 60.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	38%	–18%
2000s	53%	–12%
2010s	46%	–14%
Performance (above), Failures (below)		
1990s	11%	11%
2000s	14%	28%
2010s	18%	20%

With these results, hopefully, you'll gain a better understanding of where to place a stop to keep losses manageable. However, after price reaches the ultimate high or low, it can return to the pattern and I didn't measure that.

Table 60.8 shows the performance over three decades. I excluded bear markets from this table because they only happened in the 2000s.

Performance over time. Performance bounces around for both breakout directions. The 2000s did well for upward breakouts but penalized downward ones.

Failures over time. Upward breakouts see failures increase over the decades, but downward breakouts are more random.

Table 60.9 shows busted pattern performance. Let's talk about the bull market, downward breakout column because it has the most samples.

Busted patterns count. With 28% of scallops busting, that's about the bust rate we see in other chart pattern types.

Busted occurrence. I sorted the busts into one of three bins: single, double, and more than two busts (triple+). Most of the patterns will single bust, and that's good news. Why? Because single busted patterns outperform.

Busted and non-busted performance. I compared the performance of busted patterns against their non-busted piers. Single

busted patterns show the best performance, beating the other two rows. With 85% of scallops single busting, you don't have to worry (well, maybe a little) about catching a double or triple bust, so you can stay in the trade for a longer ride to capture as much of the average 52% gain as you can.

Table 60.9 Busted Patterns

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	94 or 20%	313 or 28%	41 or 9%
Single bust count	55 or 59%	267 or 85%	27 or 66%
Double bust count	29 or 31%	7 or 2%	1 or 2%
Triple+ bust count	10 or 11%	39 or 12%	13 or 32%
Performance for all busted patterns	–12%	45%	29%
Single busted performance	–18%	52%	66%
Non-busted performance	–16%	47%	21%

Trading Tactics

Table 60.10 shows trading tactics for descending and inverted scallops.

Measure rule, targets. Use the measure rule as a guide to finding a price target. To use it, compute the scallop height and project it in the direction of the breakout.

For example, the height of the scallop shown in Figure 60.4 is the price difference between B and C. The high is at 11.55 and the low is at 8.21, giving a difference of 3.34. Subtract this difference from the low, 8.21 (for a downward breakout, or add it to C for upward breakouts), giving a target of 4.87. Price reaches the target less than a month after the breakout.

The lower portion of the table shows how often the measure rule works. The example cited above uses the full height in a bear market. The table shows the measure rule works just 23% of the time. For a closer target cut the height in half or a quarter and apply it to the breakout price.

Another check of the target is to turn it into a percentage decline. In this example, the predicted decline measures 41% (or 3.34/8.21). Because the scallop is in a bear market, Table 60.3 shows that 80% will fail to see price drop more than 35% (the closest decline to 41%). The results suggest the target is too far away and fewer than 20% will decline that far.

Entry signal. Sell short when price closes below the scallop's low. That means a *close* below point B. If you own a stock, consider selling, because price is likely to continue down (it's a bear market, after all).

Table 60.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Used to set a target price. Compute the difference between the scallop's high and low. Subtract the difference from the breakout price for downward breakouts or add it to the pattern's top for upward breakouts. The result is the target price. The bottom portion of the table shows how often price reaches the target.
Entry signal	For downward breakouts, enter a trade when price closes below the bottom of the scallop.
Exit signal	If price rises to the price level of the start of the pattern, consider closing out your short position. If it rises above the pattern's high, get out of the trade. Now!
Search for nearby support and resistance	Avoid nearby underlying support. Look for minor highs and lows, solid blocks of horizontal price movement, round numbers, trendlines, and chart pattern support and resistance.
Wait for breakout	Wait for price to close below the formation low or above the scallop's top before entering a trade.
Stop location	See Table 60.7
Busted trade	Downward breakouts in bull markets that single bust can lead to profitable trades.

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching quarter height target	86%	79%	69%

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	77%	58%	47%
Percentage reaching full height target	62%	29%	23%
Percentage reaching 2× height	42%	8%	6%

Exit signal. Consider covering your short if price retraces to the price level of point A in the figure, the start of the pattern. Always close out your short position if price rises to C, the highest high in the pattern. If that happens, the stock is saying you have made a mistake. Get out.

Search for nearby support and resistance. This step is important. If you know where support and resistance are, you can determine how far price will fall or rise, respectively. Trade or do not trade accordingly. Also remember that price *will* push through support and resistance eventually, if given the chance.

Wait for breakout. Before you short a stock, do your homework and make sure it is worth shorting. Do not short a descending and inverted scallop until it confirms, meaning that price must close below the pattern's low.

Stop location. Consult Table 60.7 for guidance on where to place a stop-loss order.

Busted trade. Perhaps the best way to trade a scallop is to wait for a downward breakout to bust in a bull market. Single busts happen 85% of the time according to Table 60.9 and lead to average gains of 52%.

Sample Trade

Figure 60.4 shows this chapter's sample trade. Here is how Rich used the pattern.

Rich is an experienced trader who dares to short a stock when the fundamentals warrant. In the bear market of 2001, when tech stocks were being slaughtered wholesale, he started fishing for stocks to short and found a candidate in Gateway.

He did his fundamental research by checking out the company and others in the same industry. When he was comfortable with his choice, he waited for the right opportunity and found it when the descending and inverted scallop appeared in May.

“I reviewed the identification guidelines, and some of what I found worried me.” The overall price trend from January was downward except for the recent retrace in April (D). The May scallop looked good, like an inverted J with a smooth top. The bowl height as a percentage of the scallop's height turned out to be 65%, close to the 61.8% Fibonacci number, but was it close enough? The ends of the scallop were clean (meaning a sharp, visible turn), and the pattern looked proportional.

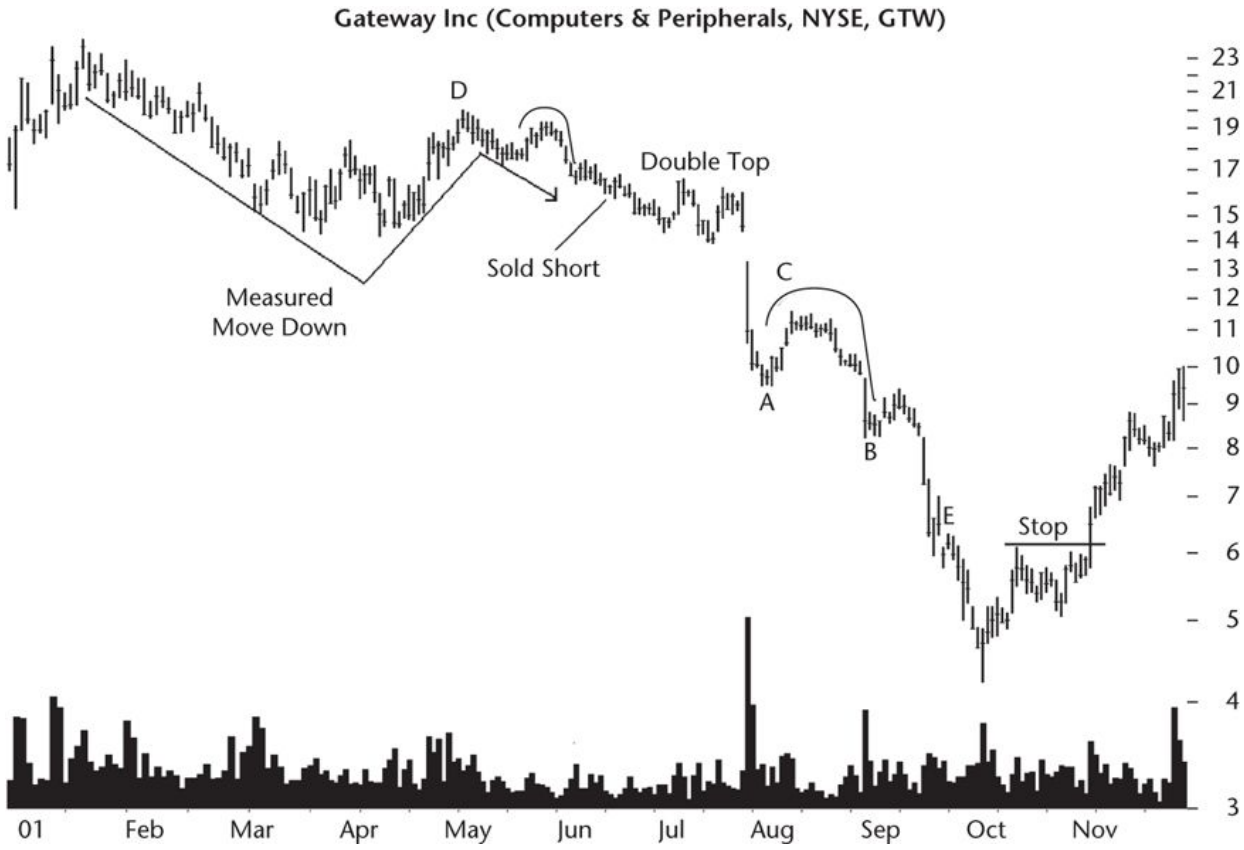


Figure 60.4 As described in the Sample Trade, Rich shorted this stock and a stop closed out his position.

Most knowledgeable traders would have no trouble spotting this scallop. Combined with the April peak (D), the scallop looked like a double top.

"I shorted it the day after price closed below the lowest low in the pattern at 16. Then I placed a stop just above the pattern's high at 20.05," figuring that it was just above a round number (a common resistance area) and just above two minor highs (the scallop top and the earlier peak in April). "Now that I think about it, the stop was too far away: 25%. That was a mistake."

Price slid in a straight-line run, following the slope of the earlier downturn (January to March), a measured move down pattern that predicted a low of about 10. "That decline gave me confidence and room to ride out the small double top in June."

Then earnings came out, and the stock gapped downward in mid-July, forming another scallop in August. "I remember rubbing my

hands together with glee.” He calculated the price target for this lower scallop and saw that it was 4.87. He did not think price would drop that far, but he monitored it closely, trailing his stop along the way to capture more profit, just in case.

Price reached a low of 4.24 in early October and then started rebounding. His stop was at 6.35, a few pennies above the minor high in September (E) and just above the early October peak. When price touched his stop, his broker closed out the position.

From the buy price of 16 to the stop price of 6.35, he made 60% in about 5 months.

“I'm shaking my head about the stop placement in this trade,” he said. “Price hit 4.24, and my stop was at 6.35. That's 50% away. What was I thinking? I'll have to work on that.”

61
Three Falling Peaks

RESULTS SNAPSHOT

Appearance: Three peaks, each with a price lower than the previous and proportional to one another.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	21 out of 36	8 out of 19
Breakeven failure rate	22%	7%
Average decline	15%	23%
Volume trend	Downward	Random
Pullbacks	66%	63%
Percentage meeting price target	23%	24%
See also	Triple tops	

I first learned about this chart pattern when Robert Fischer asked me to endorse his book, coauthored with Jens Fischer, *Candlesticks, Fibonacci, and Chart Pattern Trading Tools* (Wiley, 2003).

The chart pattern is especially effective in bear markets where the performance rank is 8. The failure rate is low, too, with a rank of 7 (not shown, but a rank of 1 means the fewest failures).

One disappointment with this chart pattern is how infrequently the measure rule works. Less than a quarter of the time, price reaches the target (which is the pattern height subtracted from the lowest low price). That can be explained because the pattern is often tall, so expecting a tall decline is often unrealistic.

Let's look under the hood to see what drives this pattern.

Tour

What does a three falling peaks chart pattern look like? I am sure you can conjure up an image of one, but **Figure 61.1** shows two examples. The pattern consists of three peaks of equal size and shape, with each succeeding peak lower than the prior one.

Many times, you will find this pattern at the end of an uptrend (peak A1 marks the end), so it acts as a reversal. At other times, it will continue the downtrend like the B1 to B3 peaks show.

Is that all there is to know about identifying three falling peaks? Actually, it is a bit more complicated, so let's discuss finding these patterns.

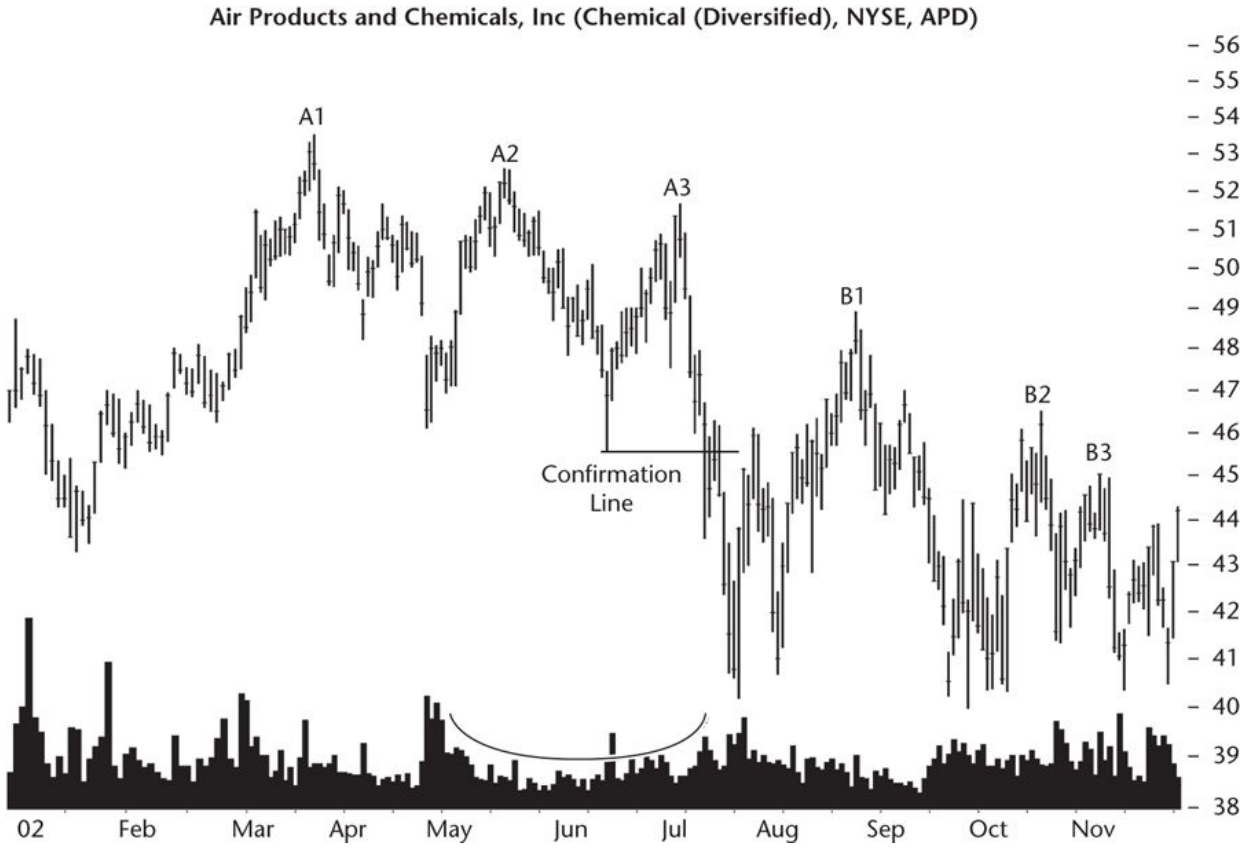


Figure 61.1 The three falling peaks chart pattern begins with the highest peak in the trend and continues with two successively lower peaks.

Identification Guidelines

Table 61.1 shows the identification guidelines for the three falling peaks chart pattern.

Appearance. The highest high in each peak must be lower than the prior peak. Allow no ties because we are not searching for double or triple tops. The three peaks need not follow a straight down-sloping trendline.

The three peaks should look similar. Don't mix wide peaks with narrow ones. However, I don't have a good reason for requiring the peaks to look similar. I didn't test the behavior of odd-looking patterns, so if you want to mix narrow and wide peaks, then that's fine.

Price trend. Since we are looking for three peaks, you are going to have to do some counting. (Have a set of fingers available, but toes work, too. I tested this.) Begin counting with the highest high on the chart where an upward price trend ends and a stair-step decline begins. Make sure that each peak is below the price of the prior one.

Proportion. The patterns I chose appeared similar in size and shape, meaning I did not mix wide and tall peaks with short ones. Consider Figure 61.2. Peaks A1, A2, and A3 appear similar in magnitude. They are all significant peaks, and each peak is below the one before.

Notice that the B peaks (B1, B2, B3) are much smaller in size and shape but distinguishable as three independent peaks, not three peaks born from the same congestion region. Both A1 to A3 and B1 to B3 are valid three falling peaks patterns.

The reason for the rule about proportion is to avoid confusion about peak selection. Consider peaks C and D. To me, these look like something I missed with my lawnmower. They are minor highs, as are the other A peaks, but they are not of the same magnitude. They are 1- or 2-day price spikes that appear out of place with the rounded-appearing A1 peak.

Table 61.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for three peaks, each priced below the prior one and each appearing similar.
Price trend	Start at the end of an upward price trend and look for three descending peaks.
Proportion	Each peak should look similar to its preceding peak. If you begin with wide peaks, select only wide ones, but be flexible.
Breakout direction, confirmation	The breakout is always downward when price closes below the bottom of the lowest price in the pattern. The pattern confirms as valid only after a downward breakout.

Figure 61.2 Peaks A1, A2, and A3 form three falling peaks, as do B1, B2, and B3. Peaks C and D are too small and narrow to be part of the A1–A3 pattern. Peak E is fine, but the higher A3 peak suggests that A3 is a better selection as the last peak in the series.

When selecting the three peaks, I ignored C and D and went with A1, A2, and A3.

Why not select peak E? This peak is robust enough to join the party, so you could call it the third peak. When A3 comes along, you might question the validity of the A1, A2, E pattern because A3 forms a higher high.

The way I looked at the pattern, I liked the idea that you could draw a trendline along the A1, A2, and A3 peaks (which isn't mandatory). Having E as the last peak seems out of place. Also, a higher peak (such as A3 when E was the third peak) before confirmation might invalidate the pattern.

However, I disallowed patterns when price closed above the highest high (A1), not a close above the lowest high (E). You might consider a close above the lowest high as invalidating the pattern. I have not tested this variation, but it might lead to better (or worse) performance.

Breakout direction. The breakout from this pattern is always downward when price closes below the lowest valley in the pattern. An upward breakout (a close above the top of the highest peak) invalidates the three falling peaks pattern.

The figure shows the confirmation price as a horizontal line, drawn from the lowest low. The pattern confirms as a valid pattern when price closes below the line, usually the valley between the second and last peak. If the valley between peaks 1 and 2 marks the lowest low, I would ignore it and use the most recent valley (the one between the second and last peaks) as the confirmation price. That will get you in (to short) or out (of a long holding) sooner than if you wait for price to close below the lowest low set by the first two peaks.

Focus on Failures

Figure 61.3 is the basis of a quiz. Which of the three patterns (A, B, or C) are valid three falling peaks patterns? Let me work right to left, beginning with the C series. Is C1 to C3 a valid three falling peaks pattern? We are looking for three *falling* peaks, and these three are rising. Thus, the C series is not a three falling peaks pattern.

What about B1, B2, and B3? Here we have three peaks, each one below the prior one. B2 and B3 are narrow and B1 seems wide. You might exclude it on that basis alone (I would not because they look fine to me. My reading glasses are around here, somewhere), but there is a much bigger problem. What is it?

Confirmation. The pattern does not confirm because price never closes below the lowest low before climbing above the highest high. The B series of peaks is not a valid three falling peaks pattern.

Figure 61.3 Which of these patterns is a valid three falling peaks chart pattern?

What about A1, A2, and A3? The three peaks appear similar, and the pattern confirms when price closes below the valley between A2 and A3. Guess what? It is also an invalid pattern. Why?

Look at peak A2. See that spike to the left of A2? It is part of A2, and it is taller than A1 by 2 cents. Thus, the second peak is higher than the first, so it is not a valid three falling peaks pattern.

In my statistics, I did not include it as a valid pattern, but since it worked out well, you might research similar patterns (with a peak slightly above the prior peak) and see how they perform. Yes, I'm being picky on this one. If you want to include a wider peak A2 as valid, then that's fine. The overall pattern shows three significant highs trending downward.

Figure 61.4 shows a common failure of the three falling peaks chart pattern. The stock drops after the breakout but only by a small amount before encountering support.

In the figure, the A pattern forms at the top of a long uptrend that began in November 1999 (not shown). The pattern works just fine. It's a valid three falling peaks pattern and price declines like it's supposed to.

The B pattern is farther down the price chain, so it must be closer to the ultimate low. It is, and price breaks out downward at E, falling just 2% below D, and then begins climbing. The climb to F measures a whopping 58%.

If you were to look back in time, you would see a large zone of support extending back as far as 1995. That support is not as clear as it could be, but the nearness in price of the October bottom and point D suggests an effective support zone. The stock tried to pierce the zone for the third time (at E) and failed. Pattern B failed as a three falling peaks pattern (it's a valid chart pattern, but it didn't perform up to expectations).

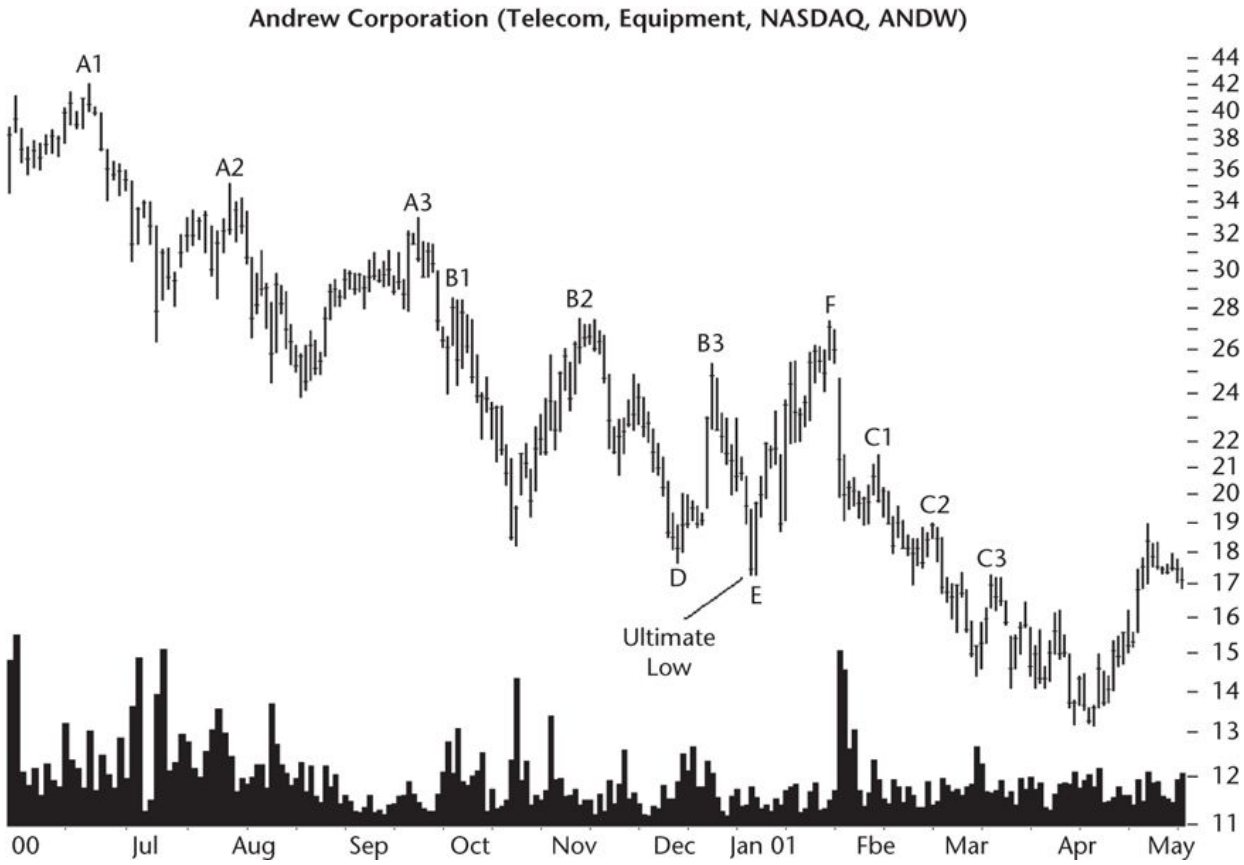


Figure 61.4 After declining just 2% below point D, the stock rallies 58% from E to F, signaling a trend change.

The lesson from this figure is twofold. First, the best trades often come after trend changes. The lower down the trend the three falling peaks pattern appears, the less potential profit remains.

That is not always the case because of how I determine a trend change (a 20% rise off the ultimate low). The ultimate low, as in this case, can appear in the middle of a downtrend, not at the very end. Still the guideline is a good one. The rise to F signaled a trend change, making E the ultimate low.

Second, always search for underlying support before trading, especially if you intend to short a stock. Once you place a trade, use a stop-loss order to protect your money.

Pattern C is a valid three falling peaks, and the ultimate low just squeaks by, with a decline of 9%. It's not a failure, but I wouldn't bring it home and tell Mom I'm going to marry it.

Statistics

Table 61.2 shows general statistics.

Number found. I found 3,184 patterns (yes, I ran out of finger and toes counting that many) in 322 stocks and found the first one in June 1995 and the most recent in March 2019. Not all stocks covered the entire period, some no longer trade, and I'm sure I gave up searching for these patterns because they are so prolific.

Reversal (R), continuation (C) occurrence. Most of the patterns appear at the end of an uptrend. They act as reversals. The others are part of a downtrend in progress, sometimes as the second or third chart pattern in a row.

Table 61.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,300	884
Reversal (R), continuation (C) occurrence	71% R, 29% C	63% R, 37% C
Reversal, continuation performance	–14% R, –16% C	–23% R, –22% C
Average decline	–15%	–23%
Standard & Poor's 500 change	–3%	–11%
Days to ultimate low	55	37
How many change trend?	27%	50%

Reversal/continuation performance. In bull markets, continuations perform marginally better than reversals, but in bear markets, the results flip with reversals outperforming slightly.

Average decline. As one might expect, the 23% decline in bear markets handily beats the 15% drop in bull markets. This finding suggests the pattern is more at home in bear markets than in bull ones. It is a bearish pattern, after all.

Standard & Poor's 500 change. In both bull and bear markets, the S&P 500 index declined. I measured the move in the index by

using the dates of the breakout from the three falling peaks chart pattern to the ultimate low.

Notice how the large S&P decline—11%—helped the bear market performance. The lesson here is to always trade with the market trend. Before placing a trade, ask yourself if the market is going to rise or fall. Go long or short accordingly. Don't trade against the market or industry trend.

Days to ultimate low. It takes between 1 and 2 months for price to reach the ultimate low on average. Since price declined 23% in 37 days in bear markets but only 15% in 55 days in bull markets, the bear market decline must have been steeper. The math says the bear market drop is 2.3 times as fast as the bull market one. Now that's something you can tell Mom.

How many change trend? This row is a count of how many chart patterns see price drop more than 20%. If we use the average for all chart patterns as the benchmark, the numbers shown are just one percentage point from their respective averages. Notice, however, that almost twice as many patterns drop more than 20% in bear markets.

Table 61.3 shows failure rates for this chart pattern. The bear market rates are lower than the bull market ones. For best performance, trade this pattern in bear markets.

Table 61.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	517 or 22%	65 or 7%
10	544 or 46%	132 or 22%
15	340 or 61%	115 or 35%
20	272 or 73%	128 or 50%
25	186 or 81%	103 or 61%
30	155 or 88%	92 or 72%
35	99 or 92%	71 or 80%
50	147 or 98%	133 or 95%
75	40 or 100%	43 or 100%
Over 75	0 or 100%	2 or 100%

Also, notice how the failure rate climbs for small changes in the maximum price decline. For example, in bear markets, 7% of three falling peaks patterns fail to drop more than 5% after the breakout. The breakeven rate triples to 22% failing to drop more than 10% and rises to 35% failing to decline more than 15%. This type of increase is typical for many chart pattern types.

What the numbers show is that the decline may not be substantial before a rebound occurs, because much of the decline has already taken place (with each peak). By that, I mean the decline from the first to the third peak is not included in the table, only the drop from the breakout to the ultimate low.

Table 61.4 shows breakout-related statistics.

Breakout direction. This chart pattern breaks out downward all of the time. An upward breakout invalidates the pattern.

Yearly position, performance. In bull markets, the best performance comes from patterns with breakouts within a third of the yearly low. Bear market patterns do best near the yearly high. However, the 29% decline is based on just 33 patterns, so it's likely to change with additional samples.

Pullbacks. A pullback occurs about two-thirds of the time and takes 11 or 12 days, on average, to complete the journey back to the breakout price. When a pullback occurs, performance suffers. For example, in bull markets, patterns with pullbacks see price drop 14% after the breakout. Without pullbacks, the decline averages 16%. The bear market shows an even wider spread.

After a pullback completes, price resumes declining about half the time.

Table 61.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –16%, M –14%, H –13%	L –23%, M –23%, H –29%
Pullback occurrence	66%	63%
Average time to pullback bottoms	–7% in 6 days	–11% in 6 days
Average time to pullback ends	11 days	12 days
Average decline for patterns with pullbacks	–14%	–21%
Average decline for patterns without pullbacks	–16%	–26%
Percentage price resumes trend	54%	51%
Performance with breakout day gap	–16%	–25%
Performance without breakout day gap	–15%	–22%
Average gap size	$1.32	$1.23

Gaps. Breakout day gaps help performance. I measured this by calculating performance using the breakout price, which is the opening price the day *after* the gap. Thus, you can open a trade after a gap appears and capture the better performance.

Table 61.5 shows pattern size statistics.

Height. Height is usually the best predictor of performance, and you can see that tall patterns in bull markets outperform short ones.

To use this, measure the height of the three falling peaks chart pattern (highest high to lowest low) and divide by the breakout price (the lowest low). If the result is larger than the median shown in the table, then you have a tall pattern.

Width. With this pattern, width doesn't give you much of a performance edge.

Height and width combinations. The bear market numbers don't show a compelling advantage to a height and width combination. Bull market patterns suggest sticking with a tall pattern, either narrow or wide (narrow performs better).

Table 61.6 shows volume-related statistics.

Volume trend. The bear market statistics show 50.1% have volume trending upward. That's random. Even the bull market value is near random.

Rising/Falling volume, breakout day volume. Neither column of numbers shows volume having much influence on performance.

Table 61.7 shows how often price reaches a stop location. Because the pattern is tall, a stop at the pattern's top may never be hit as price searches for the ultimate low. After it finds the ultimate low, then yes, price can rebound to trigger the stop. I only looked as price searched for the ultimate low, not after.

Table 61.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–16%	–23%
Short pattern performance	–14%	–23%
Median height as a percentage of breakout price	22.4%	37.1%
Narrow pattern performance	–15%	–22%
Wide pattern performance	–15%	–23%
Median width	57 days	62 days
Short and narrow performance	–14%	–22%
Short and wide performance	–14%	–23%
Tall and wide performance	–16%	–23%
Tall and narrow performance	–17%	–22%

Table 61.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	57% down	50% up
Rising volume trend performance	–15%	–22%
Falling volume trend performance	–15%	–24%
Heavy breakout volume performance	–15%	–23%
Light breakout volume performance	–15%	–23%

Table 61.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	0%	0%
Middle	8%	3%
Pattern bottom	72%	71%

Table 61.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–17%
2000s	–13%
2010s	–15%
Performance (above), Failures (below)	
1990s	15%
2000s	27%
2010s	24%

Once you decide on a location for your stop-loss order, change the potential loss into a percentage of the current price to see if it's a value you can tolerate.

Table 61.8 shows the performance over three decades. Bear markets are not included in the table because they all occurred in the 2000s.

Performance over time. The performance over three decades is stable, with the 2000s showing the worst performance (price declines least) and the 1990s showing the best.

Failures over time. The failure rate bounces around quite a bit as the table shows. Failures were much lower in the 1990s than they have been in the two more recent decades.

Table 61.9 shows busted pattern performance.

Table 61.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	796 or 35%	85 or 10%
Single bust count	619 or 78%	60 or 71%
Double bust count	30 or 4%	5 or 6%
Triple+ bust count	147 or 18%	20 or 24%
Performance for all busted patterns	40%	34%
Single busted performance	49%	46%

Busted patterns count. Over a third of the patterns will bust. A bust happens after price breaks out downward, drops no more than 10%, and recovers to close all the way above the top of the pattern. With this pattern being so tall, if it busts a downward breakout, there must be a good reason, so do your research and check the fundamentals.

Busted occurrence. For those patterns that busted, I put them into one of three bins (single, double, and more than two busts, which I call triple+) based on how many times they bust. Single busts happen most often, and my guess is that's because the three falling peaks pattern is so tall.

Busted and non-busted performance. I don't show the performance of a non-busted three falling peaks pattern because there is no such thing. However, I show the performance of busted patterns as a group (single, double, and triple+ busts) and single busted patterns.

If you want to trade a busted pattern, hope it single busts and ride price upward. The percentage measures from the top of the chart pattern to the ultimate high.

Trading Tactics

Table 61.10 shows trading tactics.

Measure rule, targets. Use the formation height subtracted from the lowest low in the three falling peaks chart pattern to get a target. As an example, consider Figure 61.6. The highest high is at point 1 (49) and the lowest low, point A (33), giving a height of 16. Subtracting the height from the lowest low gives a target of 17. The figure does not show it, but price met the target and continued much lower.

The bottom portion of the table shows that using the full height (as we did in this example) rarely works. Consider cutting the height in half or more and subtracting it from the breakout price to get a closer target. Ignore any target below zero.

Table 61.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height from the highest high to lowest low in the pattern and then subtract the result from the lowest low. The result gives a target price. Use the lower portion of this table to see how often this method works.
Underlying support	Before trading, check for support zones and avoid trading a stock with nearby support.
Early entry	If the valley between the first two peaks is below the valley between the last two peaks, use the more recent valley as the confirmation price instead of the lowest low in the pattern.
Wait for confirmation	Wait for price to close below the breakout (the lowest low or trendline break) before shorting the stock.

Description	Bull Market	Bear Market
Percentage reaching quarter height target	69%	71%
Percentage reaching half height target	47%	49%
Percentage reaching full height target	23%	24%
Percentage reaching 2× height	7%	8%

Once you have a target located, change the potential drop into a percentage to see if it is realistic. If you're unsure, then use Table 61.3 to help gauge the drop. In our example the breakout price is about 35, so the decline would be 16/35 or 46%. Table 61.3 shows that in bear markets 80% of patterns will fail to see price drop more than 35% and 95% will fail to see price drop more than 50%. So expecting a 46% decline is unrealistic.

Underlying support. Before trading the chart pattern, check for underlying support. Underlying support will tell you how far price is likely to decline. If underlying support is too close to the breakout or too robust, then search for another trade.

Overhead resistance will tell you how much you stand to lose when things go wrong. Look for a nearby minor high at which to place a stop; just above the lowest of the three peaks is a good location. If the stop is too far away from the breakout price, then look elsewhere for a more promising trade or move the stop closer to the breakout price.

Early entry. In this example, compare the price of the lowest low between the first two peaks (1 and 2) and the last two peaks (2 and 3). If the right valley (B) is higher than the left (A), use the right valley (B) as the breakout price. A close below the higher of the two valleys will get you in earlier than waiting for a close below the lowest low.

Wait for confirmation. Wait for a close below the lowest low in the pattern (or use Early entry) before trading the chart pattern. Only when price closes below the lowest low does the pattern become valid. In too many cases that I have seen, the pattern does not confirm and price shoots upward. A short sale on such a pattern quickly turns into a loss. Always wait for confirmation unless you have a good reason for trading early.

Experience

I have one trade worth discussing, and I show it in **Figure 61.5**. I should have warned you that it looks complicated with all the scribbling, so don't freak out. Let's dissect the notebook entry a section at a time. I wrote this entry the day before B:

“10 January 2004. I intend to sell half my holdings on Monday's opening (it's Saturday). Three falling peaks suggests further downward spin.”

The three falling peaks pattern appears at 1, 2, 3. The peaks look similar in shape, all are prominent minor highs and narrow-looking. The pattern breaks out downward when price closes below the lowest low in the pattern. I show that with horizontal line A. The breakout happens the day before candle B.

“It busted below support and resistance congestion in Dec. 2003 (a small diamond bottom).”

The diamond bottom is the diamond shape drawn between E and 3. Price breaks out upward and rises to 3, throws back, and closes below the bottom of the pattern on the day before B. The downward move busted the upward breakout from the diamond, suggesting a strong move downward (but no guarantee, of course). As the chart shows, the strong drop didn't happen.

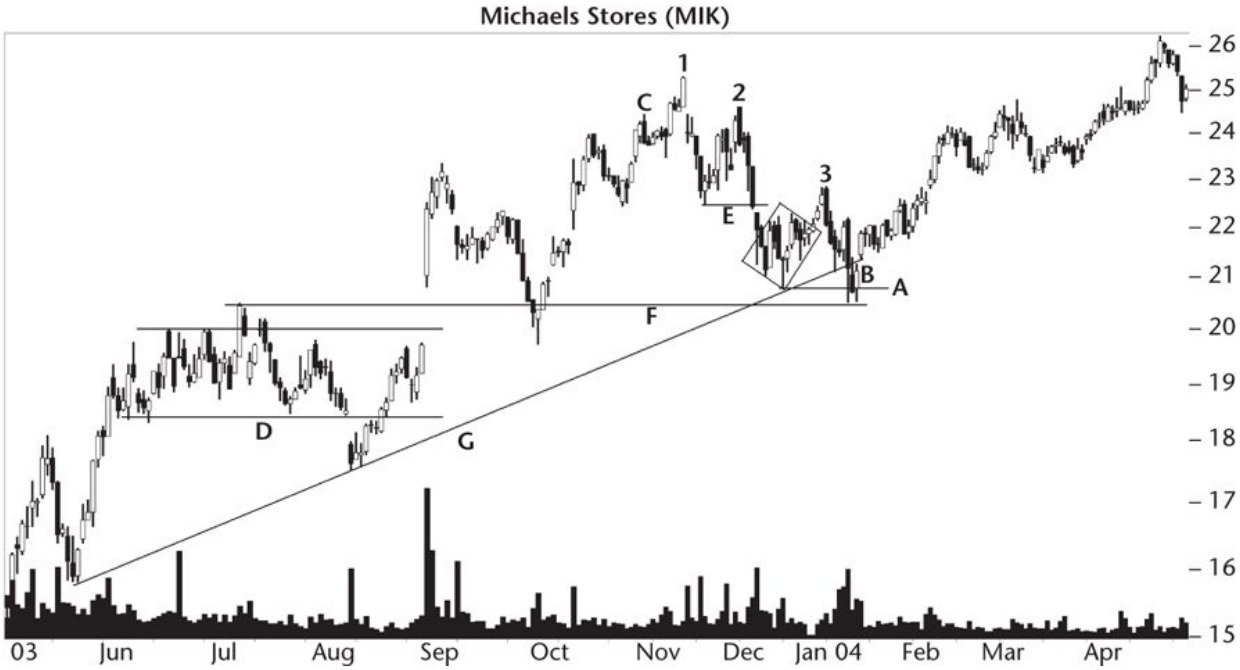


Figure 61.5 This busted three falling peaks pattern resulted in a sale just before the stock doubled.

"November head-and-shoulders top is sending prices lower. [The] measure rule says a decline to 19.66 from the 22.50 neckline breakout."

The head-and-shoulders top is at C, 1, 2, with the left shoulder (C), head (1), and right shoulder (2). The left shoulder looks like it should go to the hospital for surgery. It's almost the same height as 2 but a bit closer to the head than 2. It's not as prominent as 2, so I guess that's my main complaint. Even so, it's a valid head-and-shoulders top.

It confirms as a valid chart pattern when price closes below neckline E. Notice that the neckline at E is horizontal instead of drawn connecting the two armpits (the valley between C and 1, and 1 and 2). That's because the neckline would slope downward and waiting for a close below the line as a sell signal would never occur (in this case). So for down-sloping necklines, I use a horizontal line connecting the right armpit like that shown at E.

The stock dropped from E to below line A before finding support. The stock didn't drop to the 19.66 target suggested by the measure rule.

“This should find support at 18.50 to 20 from the horizontal consolidation region in June–July 2003.”

I show the support region at D, a horizontal move loosely defined by the two horizontal lines. The top of this region matches the drop near A exactly. I show that with horizontal line F. It marks the start of support.

“Since price has closed at the daily low, that suggests a lower low Monday but perhaps, a higher close. It could continue spinning down. It's broken below trendline support, the line starting in May 2003 and connecting the August and December lows.”

I show the trend with line G. It connects the three lows mentioned in my notebook. Price closed below the line the day before B. Notice the high volume as price bottomed near B.

I sold half my position at the opening price at B and received a fill at 20.77. I made 17% and 30% on two positions that I bought just over a year earlier (based in part on fundamentals).

The technical picture showed a lot of support at or near B (a long-term upward price trend, the horizontal consolidation region at D and line F) and yet indications of a further decline (downward breakout from the three falling peaks pattern, confirmed head-and-shoulders top, busted diamond bottom, breaking trendline G support).

The sale was a spectacularly bad call. The downward breakout from the three falling peaks pattern busted and the stock doubled in just over a year.

You're either laughing that I made such a bad trade or your jaw is hanging open. Imagine how good I'd look if the stock continued lower. Fortunately, I had the other half of my shares to play with.

- Lesson: Before selling, try to estimate how far price will fall. I did that for this trade, but the stock ignored it.

Sample Trade

Consider how Melody traded the stock shown in **Figure 61.6**. The day after the stock staged an upward breakout from the December–February trading range (a rectangle top pattern), she bought, receiving a fill at 20. She did not know that a bear market (in the S&P 500 index) would begin in March 2000, a month after she bought. “I forgot to change the batteries on my crystal ball,” she said.

Nothing along the way worried her about the stock's performance. She viewed the retrace in an uptrend (March and April) when the bear market began as part of the normal stair-step climb that stocks make.

Price pierced another rectangle top in May, suggesting continued strength in the stock, after it broke out upward.

When price peaked at point 1 and dropped to A on high volume, she took notice. “My study of the markets suggested that large price swings on high volume often mean a trend change.” When price made a third lower peak (3), she drew a trendline connecting the two valleys (A and B), forming an up-sloping trendline. The day after price closed below the line, she sold her holdings and received a fill at 34.27. She made 71% on the trade.

The stock continued dropping, reaching a low of 1.02 in early September 2002, for a decline of 97% below where she sold the stock.

“The good news is the cash I made on this trade allowed me to buy a crystal ball that's solar powered. I don't need to replace the batteries anymore.”

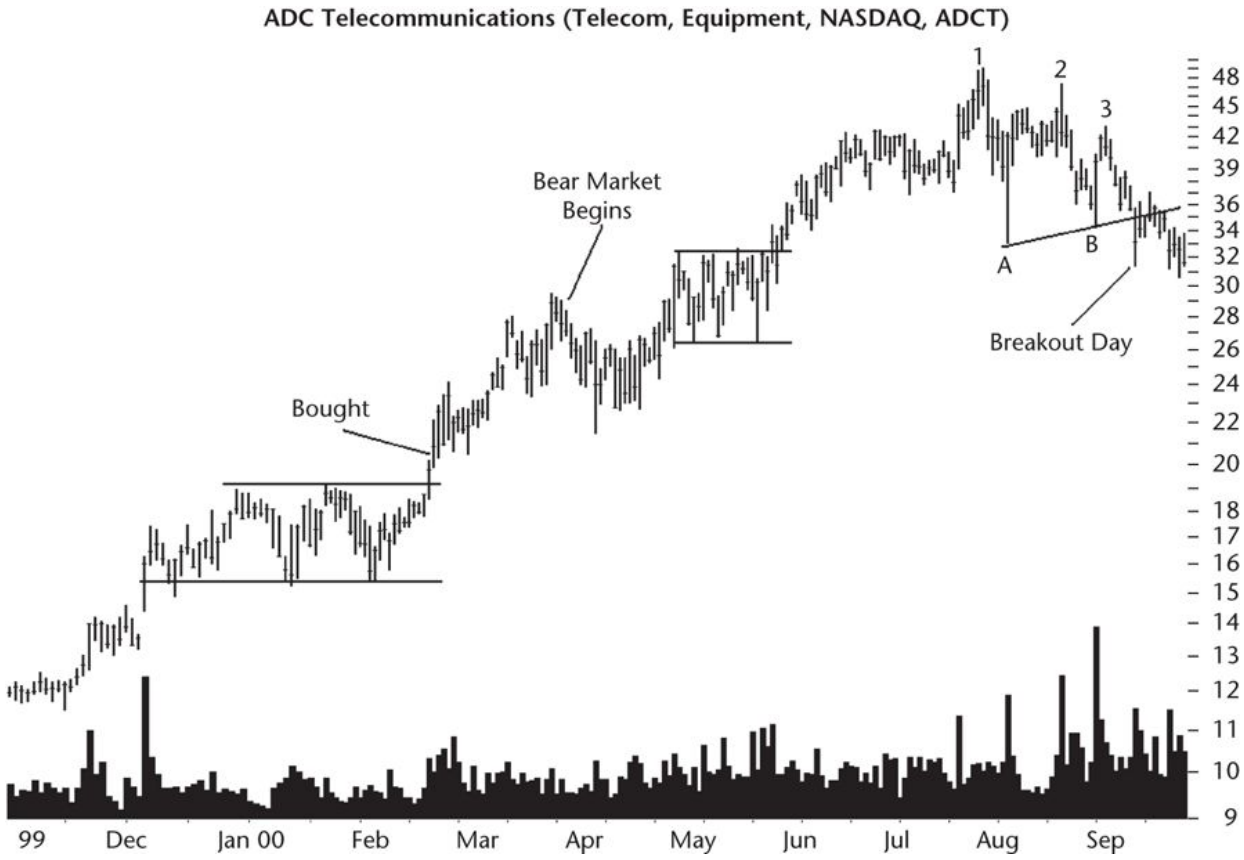
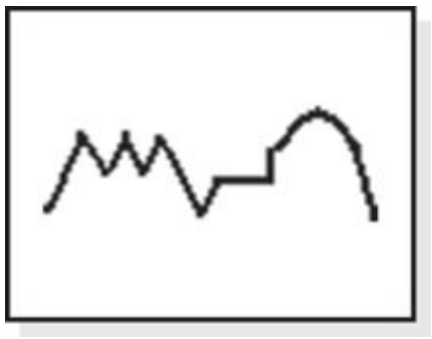


Figure 61.6 When price pierced trendline AB, it confirmed the three falling peaks chart pattern, and that event was the sell signal.

62
Three Peaks and Domed House



In 1998, I funded an expedition to the local library and spent all day going through hundreds of books, looking for chart patterns for my proposal for this book. I found an article in *The 1971 Encyclopedia of Stock Market Techniques* by Investors Intelligence, Inc. titled, “The Three Peaks and the Domed House,” written by George Lindsay.

When I searched for the pattern at home, I could see the examples he had listed for the indices, but a search of my stock charts didn't reveal any patterns. So I didn't include it in the first edition of this book, nor in the second edition. I changed my mind and include it here.

Because this pattern is so complex, it's rare. I know it appears in the Dow Jones Industrials, but it might not appear in individual stocks. As I mentioned, I couldn't find any when I looked. Thus this chapter has a different format from the other chapters. It's based on the information Lindsay provides in the article.

Tour

Figure 62.1 shows the basic model for the pattern. It *usually* begins with a base (suggesting this is optional). What is the base? It is the start of the pattern. Beyond that, I have no idea except that Lindsay says it's not important to the pattern.

The base leads to a sharp advance that forms the first of three peaks. The peaks are often flat-looking, but on a bar chart that's seldom the case. After the three peaks appear, a “separating decline” takes price much lower. It carves the three peaks from the rest of the pattern. The separating decline is important to the pattern, and it'll help you find similar three peaks and domed house patterns.

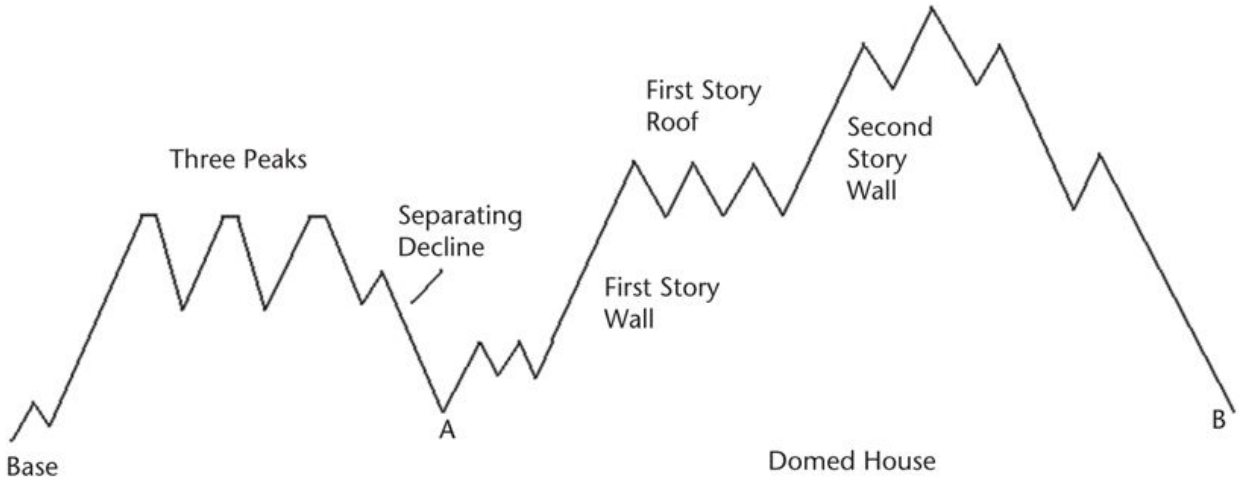


Figure 62.1 This is the three peaks and domed house model.

Price at the bottom of the separating decline consolidates and forms the foundation for the next pattern, the domed house. The house begins with a sharp but short rise that builds the first-story wall of the building. Following that, a choppy move becomes the roof of the first story.

Price rises to the second story, forming the second-story wall. The wall leads to the dome, which may look like a head-and-shoulders top but is often an irregular shape.

After the dome, price constructs the right wall of the second story, and on down to the wall of the first story. Lindsay makes a startling claim: “There has never been an exception to the rule that the entire gain in a Domed House has eventually been canceled.” In other

words, point B will always drop to the price of point A (except when it doesn't).

If you imagine three peaks (not necessarily at the same price) followed by a domed house and a huge selloff, then that will go a long way to making this pattern familiar to you. In the historical record, I looked for the pattern backward. I found a big decline and then the domed house. The two-story house should stand alone and be tall. Then I looked to the left for the three peaks. The kicker is that the pattern is huge, about 2 years long. However, he provides examples that are much shorter.

Now that you know what the bones look like, let's examine the details of this unique pattern.

Identification Guidelines

Table 62.1 shows identification guidelines for the three peaks and domed house pattern. Yes, it's complicated until you remember that you're looking for three peaks separated from a two-story house.

Table 62.1 Identification Guidelines

Points	Discussion
1, 2	This is the base. It may or may not appear and has no significance.
3, 5, 7	These points form the three peaks pattern. It's not a triple top where price needs to peak near the same price. The shape of the peaks may be flat or pointed. The time between peak 3 and 7 is about 8 months.
4, 6, 8	These are valleys between peaks 3, 5, and 7. The drop to the valley floor can be considerable (that is, the retrace of the move up from 2 to 3 can be large).
8, 9, 10	This is the separating decline. Price drops in at *least* two selling waves (7 to 8 and 9 to 10). The word *least* suggests there can be multiple selling waves, so be flexible. The separating decline divides the three peaks from the domed house, making both look squarish.
10	Valley 10 is always lower than 4 or 6 and often lower than both.
11–14	Price bottoms at 10 and then recovers to form at least two valleys that test the low at 10. The peaks and valleys here should look symmetrical, not irregular.
14–23 or 27	The time from turn 14 to 23 should be 7 months and 8-to-10 days, but the measure from 14 can include peak 27. In other words, be flexible and don't exclude a pattern because the duration is incorrect. If price at 12 or 14 fails to test the low at 10 (or 12 or 14 are absent), then try using valley 4 or 6 in the 7-month calculation to better predict the domed house peak.
15	Price rises quickly and steeply to peak 15, forming the left wall of the first story.
15–20	Look for price to form five waves here, 15–16, 16–17, and so on, ending at 19–20. Price bounces between peaks and valleys, forming the first-floor roof.
20–21	This is the second story's left wall. It's the move up to 21 from 20.

Points	Discussion
21–25	This is the dome of the house. Price forms another set of peaks and valleys, trying to move to a new high but failing.
25–27	Price drops from 25 and forms a wave 26–27, which may mirror the roof from 15–20. Point 27, if tall enough, may be the right shoulder of a head-and-shoulders top formed by the move from 21–25.
27–28	Price drops all the way back to the level of point 10 (or close to it). The drop may be a straight-line run down or it may have several retraces, but price will eventually make it to the price of 10 (in theory).

Consider **Figure 62.2**, which is a pattern Lindsay highlights in the chapter. Turns 1 and 2 are the base Lindsay says to ignore as unimportant. Point 2 leads to the first of three peaks, 3, 5, and 7, which includes valleys 4, 6, and 8. Notice how point 4 in this example retraces the entire move up from 2 and more. Valleys 6 and 8 bottom near the same price.

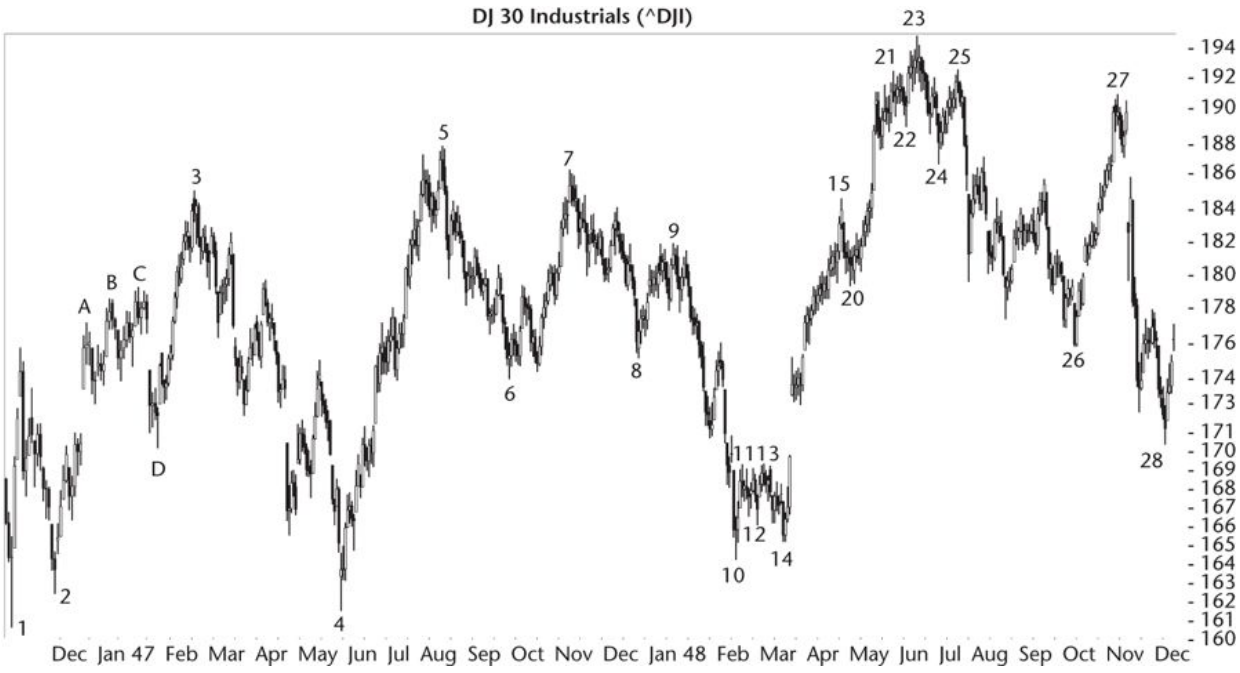


Figure 62.2 This three peaks and domed house has a few variations.

The drop from peak 7 takes price down to 10 but includes two waves, 7–8 and 9–10. Point 10 must be lower than 4 or 6, that it is (it's below

6 but not 4).

Valley 10 completes the “separating decline” that divides the three peaks from the domed house. If point 10 isn't below either valley 4 or 6, then it's not a separating decline and there may be another drop coming. Notice that the entire structure from 2 to 10 looks distinct, compact.

Points 10 through 14 form a foundation for the first floor. Points 12 and 14 attempt to return to the level of 10 but don't make it down that far. That's the test of the low at 10. In this example, it's hard to see if the peaks and valleys look irregular or symmetrical. I suppose they share the same height and spacing, so that favors a symmetrical interpretation.

Price makes a strong push higher to 15. In this example, though, the sideways move from 15 to 20 is missing. This should be a 5-point turn, the roof of the first floor, but it's not there. Lindsay says this means the domed house will be narrower than usual, and it is.

The index rises to peak at 23 and forms a series of up-and-down moves that make up the dome on the second story. Price builds the second-story wall on the right of the house in the move down from 25 to 26. The retrace from 26 to 27 is unusually steep. Lindsay says that the 7-month, 8-to-10-day span lasts in this example from points 14 to 27, not 14 to 23.

After 27 the index tumbles to 28, completing the three peaks and domed house.

Lindsay describes a miniature three peaks and domed house pattern on this chart. Peaks A, B, C are the three peaks, and the domed house is peak 3. The separating decline is the move down to D and it separates the three peaks (ABC) from the domed house (3). The key to this mini-structure is the big decline from 3 to 4, which is a move similar to the drop from the mother ship of turns 23 to 28.

He says that any of the three peaks (3, 5, 7) can support a mini–domed house pattern (in other time periods), like you see at ABC. He explains that when they occur, it's often the last peak (7) instead of the first peak (3) where he sees small patterns form.

1960 Example

Figure 62.3 shows another example of a three peaks and domed house pattern provided by Lindsay. He says that the sideways move (of just over a dozen points from high to low) from September to November mirrored by the sideways move from March to April means to be alert for a three peaks and domed house forming. Indeed, it did form. Lindsay says that even though the three peaks (3, 5, 7) are not on the same level, it's clear after the large drop from 7 to 10 that peaks 3, 5, and 7 are the operative ones.

Remember the rule that valley 10 must be below either 4 or 6 or both? Here's an example of the index dropping below both, completing the three peaks pattern.

He explains that there's a little three peaks pattern at ABC, which are the same as peaks 3–5–7 on the model. Point D is the same as 15 and peak 7 is the same as 23 on the model. After 7, of course, the index makes the dramatic move lower, mirroring the drop to 28 on the model. He says that the appearance of the smaller three peaks and domed house at ABC7 predicted the large drop (to 10) after point 7. When a three peaks and domed house pattern, either on the large or small scale, forms, a large decline follows.

Figure 62.3 The three peaks don't come close to sharing the same price in this example.

As for duration, he says that there should be at least two tests of the low at 10 to build a satisfactory base, which should happen at 12 and 14, but don't in this example. Turn 14 is too far away. Thus, to find peak 23, one should measure the duration using point 10, and not 14, to calculate the 7-month 8-to-10-day span to peak 23. In this example the measure is 7 months and 12 days.

He also says that he has used the low at 6 or even 4 in the tabulation to get the prediction to come out properly, and we've seen him use peak 27 instead of 23 in the equation. Because this idea is a way to determine when peak 23 will happen, it's worth considering. Imaging selling your holdings before price makes a dramatic plunge on the way down to turn 28.

Returning to Figure 62.3, the index completes the climb to peak 23 and drops to 26, missing turns 24 and 25 along the way. The index continues lower to 28, completing a substantial decline from the peak at 23.

1990 Example

Figure 62.4 shows one example of a three peaks and domed house that formed at the start of the 1990s. Peaks 3, 5, and 7 are not at the same price level, but that is similar to the chart we just looked at. Indeed, if you think of turns A–3–5 as the three peaks with the separating decline down to valley 6, a small pattern unfolds. The domed house would be peak 7. Price goes down to 10, which on the model (Figure 62.1) is the same as point B, where the Dow bottoms.

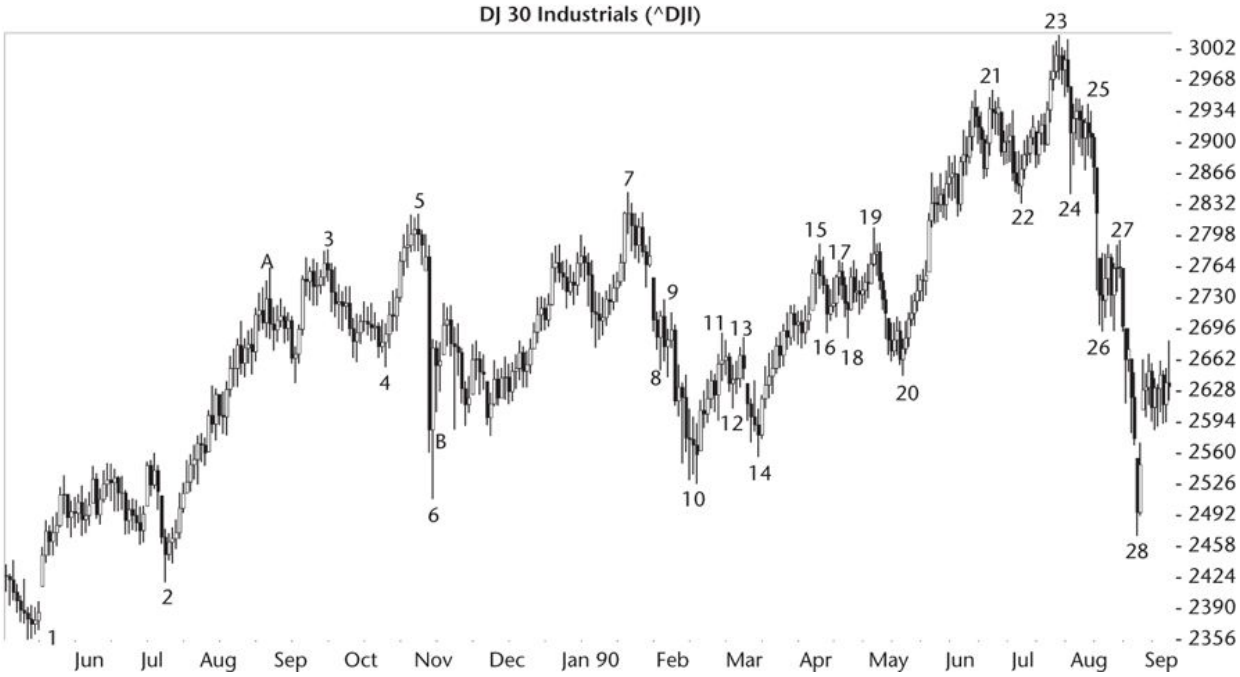


Figure 62.4 This is a more recent example of the three peaks and domed house pattern.

The bigger three peaks and domed house pattern has all of the turns marked. The separating decline from 7 to 10 shows a marked selloff, leaving the three peaks (3–5–7) distinct as the first half of the pattern.

One can argue whether valley 12 is too far away from 10 to call it a test. Point 14 seems close enough, though. The base at 10 to 14 seems clear as a launch point for the rise to the first story. The first-floor roof appears at 15 to 20, right where one would expect it to. The dome from 21 to 25 isn't graceful, but it's there. And, of course, the big decline to 28 is evident, too.

Timing is off, though. Lindsay says the duration of peaks 3 to 7 should be 8 months, give or take. In this example, it's about half that. Does that mean the distance from 14 to 23 should be half the expected 7 months, 8–10 days? *Hmm*. I guess not because eyeballing the duration comes in at about 5 months long, not 3.5 and not 7.

Counting back 7 months from the peak at 23 gives a start location not at points 14 or 10, or 6 or 4, but at peak 7. No matter. I guess the key is to know that once the domed house begins to form, take measures to protect your holdings.

2012 Example

Figure 62.5 shows a chart from 2012 with another three peaks and domed house pattern. The base is at 1, 2, and price meanders up to the first peak of three, 3. This rise is unusually long, and the three peaks are too close together. Peaks 3 to 7 should be separated by 8 months, but these total about 2 months long. I don't know how Lindsay would justify that. He might say that this is not a three peaks and domed house pattern. That's possible.

Figure 62.5 The absence of the test of point 10 suggests to use turn 4 or 6 to predict the appearance of the domed house.

However, the separating decline from 7 to 10 sets off the three peaks quite clearly. Points 11 to 14 appear as a tight congestion region and not a test of 10 at all. Does that mean we should use points 6 or 4 in the measure to predict the appearance of the domed house? Recall peak 23 should be 7 months and 8 to 10 days from the bottom at 14. Since we have no 14, let's use point 6 and see what it says (which is a method he used in one of his charts).

According to my spreadsheet, I found the number of days between 1 January 2012 and 8 July 2012 (that is 7 months and 8 days) and added that to the date of valley 6 (10 April 2012). What's the result? Answer: 16 October 2012. The actual peak is at 5 October 2012. In

other words, it missed the prediction by just 11 days. That's useful. Very useful.

The decline didn't take the index down to the price level of 10, though. It did see the Dow drop 1,200 points, or almost 9%.

Check Out

Even though the three peaks and domed house pattern is rare, it still has value. I was surprised at how accurate the 7-month prediction from points 4, 6, or 14 to peak 23 was. Seeing another three peaks and domed house pattern form may allow traders to buy protective puts on long positions, maybe sell some covered calls, or buy exchange-traded funds that short the indices. And when the index bottoms at point 28, they can jump in with a boatload of cash and ride the recovery.

Lindsay also mentions the variation, domed house and three peaks, but it's even rarer than the three peaks and domed house already discussed. I don't include that variation in this edition of the book. Perhaps you can imagine it in your dreams.

63
Three Rising Valleys

RESULTS SNAPSHOT

Appearance: Three minor lows, each higher than the prior one, all with a similar shape.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish continuation	Short-term bullish reversal
Performance rank	6 out of 39	16 out of 20
Breakeven failure rate	10%	12%
Average rise	48%	24%
Volume trend	Downward	Downward
Throwbacks	66%	66%
Percentage meeting price target	57%	30%
See also	Triple bottoms	

Like the three falling peaks chart pattern, Robert Fischer and Jens Fischer in their book, *Candlesticks, Fibonacci, and Chart Pattern Trading Tools* (Wiley, 2003), introduced me to the three rising valleys chart pattern.

The performance from this chart pattern is quite good in bull markets, with a low failure rate (ranking eighth, not shown) and high

average rise (ranking sixth, where 1 is best). In bear markets, the performance is about what you would expect from a countertrend breakout except that the failure rate is also quite good: eighth (where a rank of 1 has the fewest failures).

Throwbacks occur in two out of three trades on average. That rate is high enough that you should expect one when you trade.

Buckle your seatbelt and let's take a tour.

Tour

What does a three rising valleys chart pattern look like? **Figure 63.1** shows a good example of one. Most often, the pattern will appear in a rising price trend. The one shown, however, comes after a short-term downtrend (starting with the July peak).

The three valleys in the figure are pronounced, and their lows almost follow a trendline upward (not shown). Three valleys following a trendline is not required for this pattern, but you may see it from time to time. Your eye tends to line up the valleys, so you will pick minor lows that seem similar to one another along that trend.

Each valley (1, 2, 3) is a minor low, distinct, and pointed-looking. Valley 2 is a bit more rounded-looking than the other two, but close enough. The three valleys *look* as if they should be part of the same pattern.

The following section further discusses identification guidelines.

Figure 63.1 The three rising valleys chart pattern.

Identification Guidelines

Figure 63.2 shows another example of the three rising valleys chart pattern. This one occurs well into the upward price trend, and there are others not shown in the figure that occurred earlier. Points 1, 2, and 3 mark the three valleys (all of them minor lows). Each valley is above the prior one. Their shape is also similar—wide in this example, not narrow like the cluster in June (point A and to the right, for the next 3 weeks or so).

The chart pattern confirms when price closes above the highest high in the pattern. I show the confirmation line on the chart. In this example, price throws back a few days after the breakout and then continues climbing until peaking in September. That peak marks the ultimate high for a rise of 34% in bear markets. That's quite good.

Figure 63.3 shows what a three rising valleys pattern (1, 2, 3) looks like in a downtrend. The pattern appears at the end of a measured move down chart pattern.

Table 63.1 shows identification guidelines.

Appearance. Each valley bottom must be above the prior valley, signaling a continued price rise. As the figure shows, however, the rise may be meager, especially in bear markets.

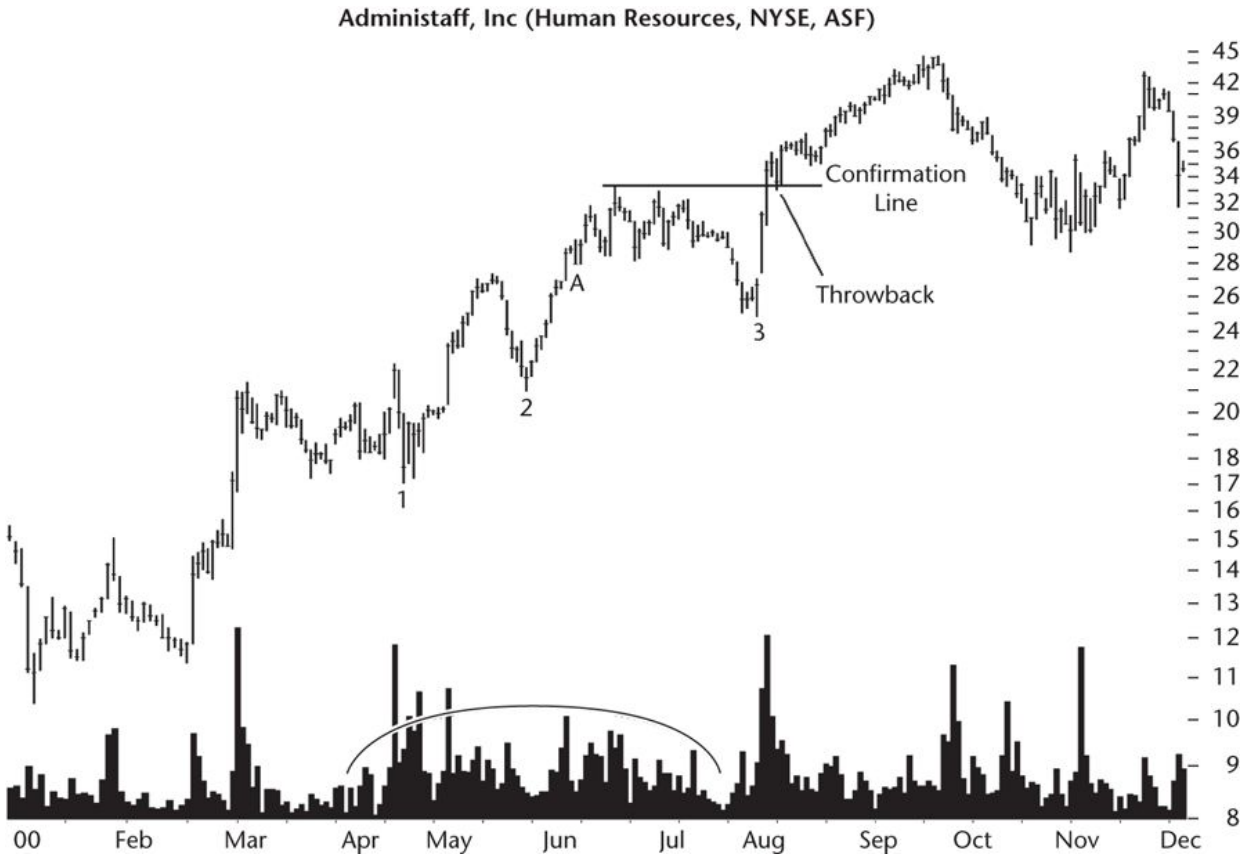


Figure 63.2 Often, the three rising valleys chart pattern will appear in an upward price trend.

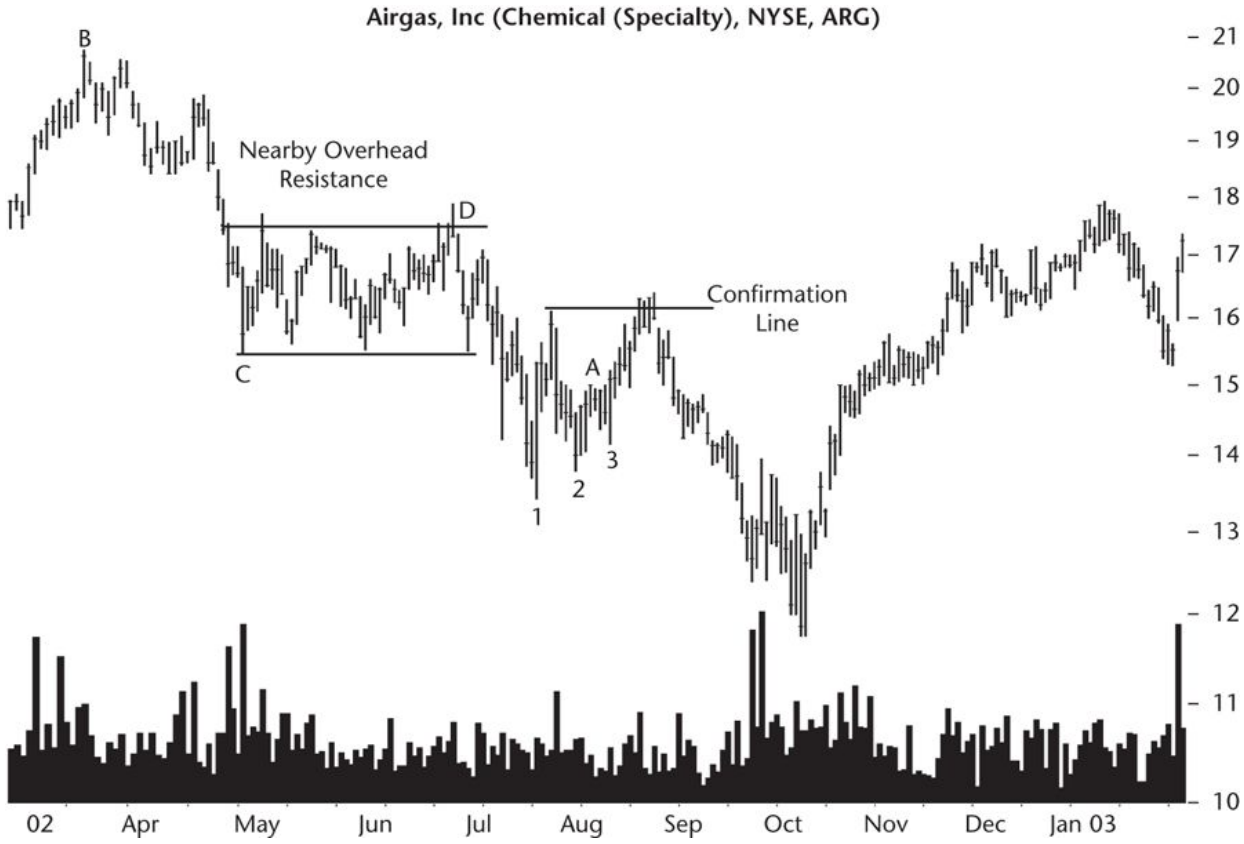


Figure 63.3 Three rising valleys appear in a downward price trend. Price confirms the pattern when it closes above the highest high.

Table 63.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for three valleys; each one must be above the prior one and look similar.
Price trend	Look for three minor lows in a row, usually found in an uptrend.
Proportion	Each valley should look similar to the last one. If you begin with wide, rounded valleys, select only similar-looking ones.
Breakout direction, confirmation	The breakout is upward by definition. Price breaks out when the stock closes above the highest peak in the chart pattern. An upward breakout confirms the pattern as valid.

Price trend. Look for the pattern in an upward price trend. That is where they appear most often. Those appearing in uptrends (set by the closing price at the trend start compared to the pattern start) perform better, too (bull market only: 51% versus 45% average gain).

Proportion. Each valley should look similar to the prior one. In the figure, the three minor lows are 3 days wide. In Figure 63.2, the turns are more graceful, wider, and the minor lows are more significant. Avoid mixing a wide minor low with a narrow one.

The statistics shown in this chapter assume each valley appears like the other two. It may be that mixing bottom shapes like points 1, 2, and A in Figure 63.2 will succeed (or even perform better), but the figure gives one example of the decline you would suffer as price dropped to valley 3 (a 16% decline from the high at A).

Breakout direction, confirmation. By definition, the breakout is always upward when price closes above the tallest peak in the pattern. If price first closes below the lowest low in the pattern, then it's not a valid three rising valleys pattern.

Confirmation happens when price closes above the highest high in the pattern. It confirms the three valleys as a valid chart pattern. Always wait for confirmation unless you have a compelling reason for entering early. Entering the trade sooner increases your risk, especially if price was trending down leading to the start of the chart pattern.

There are exceptions, of course, and the Trading Tactics section discusses them. Figure 63.3 shows an example of when getting in sooner reduces your risk and increases profits. When the peak between valleys 2 and 3 is below the highest high, then the last peak (point A) serves as the new confirmation price. In the example shown in the figure, that would change a 2% profit into a 12% one. That's not much, but you can make a million bucks by saving pennies.

Focus on Failures

Like all chart patterns, three rising valleys fails from time to time. Figure 63.3 shows one example. The minor lows marked 1, 2, and 3 show the three valleys of the pattern; each low is above the prior one. The minor lows look similar in shape, with narrow spikes in this case. The pattern confirms when price closes above the highest high (shown as the confirmation line). Price rises just above the line and then tumbles.

Why did this rising valley fail? I find it valuable to look at the big picture before zooming in. Since the pattern begins at point 1, I would notice the measured move down pattern marked by turns BC (the first leg), the corrective phase, CD, and the second down leg, D1. After a measured move down, the most common retrace is a climb back into the corrective phase, CD. After that, a resumption of the original trend (downward in this example) is a good bet.

Since the corrective phase (CD) is a solid block of horizontal price movement, it presents a formidable challenge to any price mountaineer willing to attempt the climb. I would not invest in this pattern because of that resistance and the likelihood of price dropping, resuming the downtrend. Price climbed to overhead resistance set up by the corrective phase and then ran for cover.

Statistics

Table 63.2 shows general statistics.

Number found. I uncovered a pile of these patterns (3,580 in 353 stocks), starting from the first one in December 1995 and the most recent in March 2019. Not all stocks covered the entire range, and some stocks no longer trade.

Reversal (R), continuation (C) occurrence. In bull markets, the pattern acted as a continuation pattern, but not decisively so (it's near random). In bear markets, reversals won the battle in two out of three contests.

Reversal/continuation performance. In bull markets, continuations perform better than reversals, but the situation flips in bear markets: continuations perform slightly worse.

Average rise. The average rise is 48% in bull markets and half that in bear markets. That's an intriguing result. Both have upward breakouts, but the bull market sees price do twice as well as the bear market. Does the phrase, *a rising tide lifts all boats* ring a bell? I've used it often enough in this book (sorry about that, but it's all I could think of), and this is an example of what it means. When a stock rises in a bull market, expect the climb to be higher than the rise in a bear market.

Standard & Poor's 500 change. The general market helped push price higher in bull markets (a lot, apparently) and hurt it in bear markets.

Days to ultimate high. It takes considerably longer in bull markets to reach the ultimate high than in bear markets, as the table shows. Velocity check: The rise in bear markets is 2.1 times faster than the one in bull markets. Who knew?

How many change trend? This is a measure of how many patterns see price rise more than 20% after the breakout. I consider values above 50% to be peachy, even tubular. The bull market result does fine, but the bear market one is below the average for other bearish chart pattern types (which is 46%).

Table 63.3 shows failure rates for the three rising valleys pattern. The bull market numbers are better than the bear market ones. For

example, 10% of bull market patterns fail to see price rise more than 5% after the breakout. This figure doubles to 22% failing to see price rise more than 10%. In bear markets, over half the patterns fail to rise more than 20%.

Table 63.2 General Statistics

Description	Bull Market	Bear Market
Number found	3,061	519
Reversal (R), continuation (C) occurrence	48% R, 52% C	68% R, 32% C
Reversal, continuation performance	45% R, 51% C	25% R, 23% C
Average rise	48%	24%
Standard & Poor's 500 change	16%	–1%
Days to ultimate high	351	83
How many change trend?	61%	42%

Table 63.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	297 or 10%	63 or 12%
10	363 or 22%	105 or 32%
15	291 or 31%	68 or 45%
20	242 or 39%	65 or 58%
25	178 or 45%	43 or 66%
30	169 or 50%	40 or 74%
35	180 or 56%	29 or 80%
50	358 or 68%	52 or 90%
75	391 or 81%	27 or 95%
Over 75	592 or 100%	27 or 100%

Despite what appears to be an alarming increase in failures for small price moves, the numbers are quite reasonable when compared to

other chart patterns.

What do the numbers mean? If your cost of trading is 5% and you want to make 15% (20% total), how often does the three rising valleys pattern fail? Answer: 39% in bull markets and 58% in bear markets. The result says to avoid trading this pattern in bear markets.

Of course, you will not trade each pattern perfectly and your losers will pull down your average gain, so you will have to allow for that. Trade the pattern on paper (or use a trading simulator) and see if you can make money consistently. If you cannot show a paper profit, then either you are doing it wrong or you should marry someone with lots of money.

Table 63.4 shows breakout-related statistics.

Breakout direction. By definition, a valid three rising valleys chart pattern always has an upward breakout. Don't be fooled by cheap imitations.

Yearly position, performance. The best performing patterns have breakouts near the yearly high. Well, sometimes. It's only true in bull markets. In bear markets, it's the reverse with those near the yearly low doing best. Avoid those in the middle range, though, for both market conditions.

Throwbacks. Throwbacks occur often, every two out of three trades, and it takes 12 days on average for the stock to return to the breakout price. After a throwback completes, the majority of the time, the stock resumes trending upward. That's especially true in bull markets with 81% starting to recover.

Gaps. A breakout day gap helps performance in both bull and bear markets. That finding agrees with market lore. And the thing is, I measured performance from the opening price the day *after* a gap occurred. Thus, you can buy after a gap appears and ride the stock for better performance (on average).

Table 63.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 45%, M 42%, H 49%	L 27%, M 22%, H 24%
Throwbacks occurrence	66%	66%
Average time to throwback peaks	5% in 6 days	8% in 6 days
Average time to throwback ends	12 days	12 days
Average rise for patterns with throwbacks	48%	25%
Average rise for patterns without throwbacks	48%	23%
Percentage price resumes trend	81%	69%
Performance with breakout day gap	49%	27%
Performance without breakout day gap	48%	24%
Average gap size	$0.94	$0.58

Table 63.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	47%	26%
Short pattern performance	49%	23%
Median height as a percentage of breakout price	22.4%	27.6%
Narrow pattern performance	47%	28%
Wide pattern performance	49%	21%
Median width	87 days	72 days
Short and narrow performance	48%	27%
Short and wide performance	49%	15%
Tall and wide performance	48%	23%
Tall and narrow performance	46%	31%

Table 63.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones but only in bear markets. That's disappointing because height is the best predictor of future performance that I've found. Measure the height of the chart pattern from tallest peak to lowest valley and divide by the breakout price. If the result is greater than the median shown in the table, then you have a tall pattern.

Width. Wide patterns perform better in bull markets and narrow ones do substantially better in bear markets. I used the median length, not the average, as the separator between narrow and wide.

Height and width combinations. You'll want to avoid trading bull market patterns that are both tall and narrow. They perform worst. Tall and narrow patterns in bear markets perform best. Isn't that odd? Patterns both short and wide outperform in bull markets and do worst in bear markets.

Hold on. Let me check the numbers.

Yup. They are correct. The bull market samples are more than 500 for each row, so they are solid. The bear market samples are far fewer.

They start at 89 and go up to 171. My guess is additional samples for bear markets would iron things out.

Table 63.6 shows volume-related statistics.

Volume trend. Volume trends downward in almost two of every three patterns. I found that by using linear regression, by the way.

Rising/Falling volume. Patterns with volume trending upward perform better than do those with it trending downward, but only in bear markets.

Breakout day volume. Below-average (light) breakout volume helps performance. Of course, that contradicts trading lore. In fact, some believe that if breakout volume isn't heavy, then you should avoid trading the pattern. I don't put as much faith in volume as they do. Volume isn't that good of an indicator of future performance.

Table 63.7 shows how often price reached a stop location. Because this pattern can be tall, you'll find it rare that price will meander down to the middle or bottom of the chart pattern to snag a stop-loss order placed there. However, I only checked from the breakout to the ultimate high. So if you hang onto your stock beyond the ultimate high, the stock could drop and trigger the stop-loss order.

Table 63.8 shows the performance over three decades.

Performance over time. This chart pattern performed best in the 2000s and worst in the 1990s, but the results are close to each other. Perhaps they are brothers?

Table 63.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	64% down	65% down
Rising volume trend performance	48%	28%
Falling volume trend performance	48%	22%
Heavy breakout volume performance	47%	24%
Light breakout volume performance	50%	26%

Table 63.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	81%	79%
Middle	13%	9%
Pattern bottom	1%	0%

Table 63.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	45%
2000s	50%
2010s	47%
Performance (above), Failures (below)	
1990s	8%
2000s	8%
2010s	11%

Table 63.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	422 or 14%	120 or 23%
Single bust count	275 or 65%	98 or 82%
Double bust count	122 or 29%	14 or 12%
Triple+ bust count	25 or 6%	8 or 7%
Performance for all busted patterns	–15%	–21%
Single busted performance	–20%	–25%

Failures over time. The 2010s showed a slight uptick in failures. It'll be interesting to see how this pattern behaves in the 2020s and beyond.

Table 63.9 shows busted pattern performance.

Busted patterns count. Comparatively few three rising valleys bust. As one would expect, the bear market is much tougher on

performance than is the bull market. Bear market patterns are rare, but they bust more frequently than those in bull markets.

Busted occurrence. I sorted the number of busts into single, double, and more than two (triple+) busts. Single busts happen most often followed by double and triple+ busts. That's not always the case, though. I've seen other chart patterns where triple+ busts place second for frequency.

Busted and non-busted performance. I don't have a non-busted three rising valleys pattern to compare against, not because I don't have them in stock. Rather, it's because they don't exist. So, we can only compare the busted performance with all busted types (single, double, and triple+) and single busted patterns. Single busted patterns nearly always beat the other types.

Trading Tactics

Table 63.10 shows trading tactics.

Measure rule, targets. The measure rule sets a target price, so we can check the probability of price reaching the target.

To use it, compute the formation height and add the result to the breakout price. For example, the three rising valleys marked 1, 2, and 3 in Figure 63.5 use the price difference between points 7 ($9.52) and 1 ($7.38) for a height of 2.14. Add the height to the breakout price (the highest high) to get a target of 11.66. The stock hits the target in early March.

The bottom portion of the table shows how often this works. In this example, we used the full height in a bull market. The table shows price reaches the target 57% of the time, on average. Thus, you might want to cut the height in half or more to get a closer, more reliable target.

Table 63.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the formation height (highest high minus lowest low) and add it to the highest high. The result is the target price. The bottom portion of this table shows how often it works.
Early entry	If the pattern has the highest high between the first two valleys, use the last peak (between the last two valleys) in the chart pattern as the breakout price.
Trendline break	A close above a down-sloping trendline joining the highs between the valleys can serve as the breakout price.
Wait for confirmation	Wait for price to confirm the pattern. Usually this event is a close above the highest high.
Stop location	See Table 63.7 for guidance.

Description	Bull Market	Bear Market
Percentage reaching quarter height target	88%	81%
Percentage reaching half height target	75%	59%
Percentage reaching full height target	57%	30%
Percentage reaching 2× height target	38%	13%

As a check on the projected gain, turn the height into a percentage move. In this example, the height of 2.14 as a percentage of the high (9.52) would mean a rise of 22%. Table 63.3 indicates that 39% will fail to rise more than 20% (the closest row to 22%) in a bull market. That finding means fewer than 61% will hit the target. If the success rate is too low, then reduce your target price and look for nearby overhead resistance where price might stall.

Early entry. Usually, the highest high in the pattern marks the breakout price. Sometimes, like that shown in Figure 63.3, the highest high occurs between the first two valleys. Use the high between the

second and third valley (point A in this case) as the confirmation price. That strategy will get you into the trade sooner than using the highest high.

Trendline break. You can also use a down-sloping trendline drawn between the two peaks in the pattern. Figure 63.5 shows an example as the top of a symmetrical triangle. Buy when price closes above the down-sloping trendline for the three rising valleys pattern marked 4, 5, 6.

Wait for confirmation. Whichever method you use to determine the breakout price, always wait for confirmation (that is, wait for the breakout). Most of the time, a breakout will be a close above the highest high in the pattern. An early entry or trendline break also confirms the pattern. Not waiting for confirmation is a game best left to amateurs and novice traders because of the low probability of success.

Stop location. Before placing a stop, review how often various locations will trigger a stop using Table 63.7.

Experience

I don't trade this chart pattern much at all. I think that by the time the pattern confirms, price has risen much too far off the bottom to be useful. However, here's a three rising valleys trade I made in Freeport-McMoRan Copper and Gold (FCX), which I show in **Figure 63.4**.

Price drops from a complex head-and-shoulders top in March, shown as LS (left shoulder), Head (2) (dual head), and RS (right shoulder). The pattern confirms as valid when price closes below the neckline (I) and price drops all the way down to 1.

The three rising valleys pattern appears as turns 1, 2, and 3, with each valley higher than the prior one.

Do the valleys look similar? That's open to debate. Valleys 1 and 3 look similar in that they are wide and squareish looking. Contrast 1 and 3 with valley 2. Valley 2 looks narrow and pointed. The three valleys follow an upward trendline (1, 2, 3, shown) that is reassuring from an aesthetics viewpoint. It *looks* nice. The three valleys look as if they belong together.

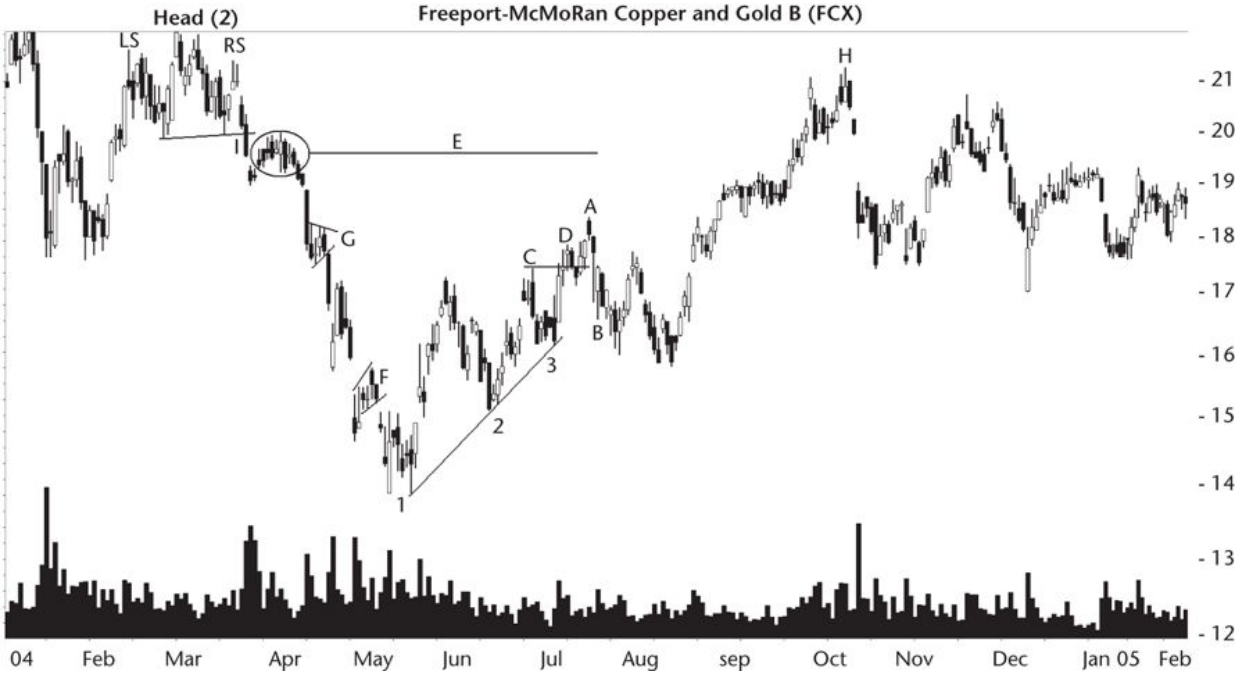


Figure 63.4 This three rising valleys chart pattern didn't work as expected.

The pattern confirms as a valid three rising valleys when price closes above the top of the pattern. The top is at line C. At D, the stock breaks out upward.

Did I buy at the open the next day? Nooo! Why not? I have no idea. Instead, I waited to buy until A. Yes, that's right. I bought on the day price peaked. I didn't buy at the open. Rather, I entered the trade a few hours after the market opened, so I received a fill at 18.08, slightly above the close on that day.

My notebook for the trade said overhead resistance was at 19.50. I show that on the chart as E, the circled area with a horizontal line extending to the right. It loomed as a ceiling, preventing a price advance.

I placed a stop at 16.93 or 6% below the buy price.

Here's what I wrote in my notebook: “Buy reason: 3 rising valleys chart pattern. [The stock] is rising above a flag in April but is encountering resistance. This may stall out and tumble, but the other stocks in the industry are recovering. Relative strength says copper is #1. I feel like this trade is not going to work.”

I'm a bit mystified as to where the flag is. I show one at F. The flag is well below the buy price, so maybe I wrote *flag* when I meant *pennant* (G). If I meant *pennant*, then yes, price was encountering resistance there (peak D aligns with G).

Here are words I don't like to read: “I feel like this trade is not going to work.”

I don't write much about the inner voice a trader has, but it's important. It's the voice in your head that speaks to you (call it intuition). When your enthusiasm is soaring, it's the calmer voice whispering the warnings.

When trading, I find it's often correct, but it can be difficult to distinguish the correct whisper from the shouted warnings of the incorrect ones. Unfortunately it's rare that I'll be able to separate it from everything else going on and obey it.

It's a lot like a premonition, a voice that warns something bad is going to happen. How many times has it warned you that you're going to

drop something, the phone is going to ring, or you'll spill something, and then, thirty seconds later, it happens?

The trading voice is a whisper signaling a note of caution. Sometimes it's loud enough to reach my consciousness and I write it down, like I did in my notebook: “This trade is not going to work.”

Wish I had listened.

Returning to the trade, the stock hit my stop-loss order at the open and took me out of the trade at 16.90 just two trading days after I entered. Here's my trading notebook: “I didn't think I'd be stopped out. At first, the loss didn't bother me [but], then I got mad. I got a quote and saw that the stock dropped to 16.53, a massive decline of 1.15 [$2.29 split unadjusted] from the prior close, and that made me feel better. Price was rebounding, but still below my stop (16.93) and below where the stock sold (16.90). These things happen. Sell reason: Stopped out. That's a 3-day drop from 18 to 16.50. *Ouch*.”

I sold at the opening price, B, and lost 7% on the trade. The stock continued down 7% below my sell price and 13% below the buy price. If I didn't use a stop, I could have lost 13% (worst case).

What did I do wrong?

- Lesson: Entry was much too late, with price climbing too far above the optimum entry. The optimum entry was the opening price the day after the breakout (the day after D, not A) or using a buy stop to enter a penny above line C.
- Lesson: Was the stop located properly? I believe I placed the stop below a minor low situated between peaks D and A and below round-number support at 17 (stop placed at 16.93). Given that I took a loss, it kept the loss to 7% when it could have been as much as 13%. So I think it was properly placed.
- Lesson: What was the target? I didn't dwell on this in my notebook, which was a mistake. I only made mention of overhead resistance at E, 19.50. That didn't allow for much profit, but my guess is this wasn't a swing trade but rather intended as an investment, for a longer term hold. The ultimate high, H, was 21.27 or 17.6% above my buy price. That's fine for a perfect swing trade, but real life suggests I wouldn't sell there, so I often shoot

for a higher target (like doubling my money) for a longer term hold. I didn't mention what the target was. In other words, besides a stop, I had no exit plan.

Sample Trade

Joshua made the trade shown in **Figure 63.5**. In late October (after an upward breakout), he noticed the three rising valleys pattern labeled 1, 2, and 3. Since price at point 4 dropped below point 3, it made him nervous trading the pattern. However, he liked that price tested the point 1 low (at 4) but rebounded (one of three conditions signaling a trend change; the other two being price pushing up through a down-sloping trendline and a close above a prior minor high).

He waited to buy the stock until the trend direction became clear. At point 6, he saw the second three rising valleys chart pattern (4, 5, 6). Then he noticed the symmetrical triangle, created by drawing trendlines along the price peaks and valleys. Looking to the left, the turns at 3 and 7 connect with the symmetrical triangle to form a weird-looking diamond.

He found that the stock was in a bull market (good) with a rising S&P 500 index (good); the breakout was in the middle of the yearly price range (bad); and the pattern was short and wide (good). The commodity channel index (CCI) issued a buy the day before the breakout, but the relative strength index (Wilder RSI) remained neutral. In short, he faced a mixed technical picture.

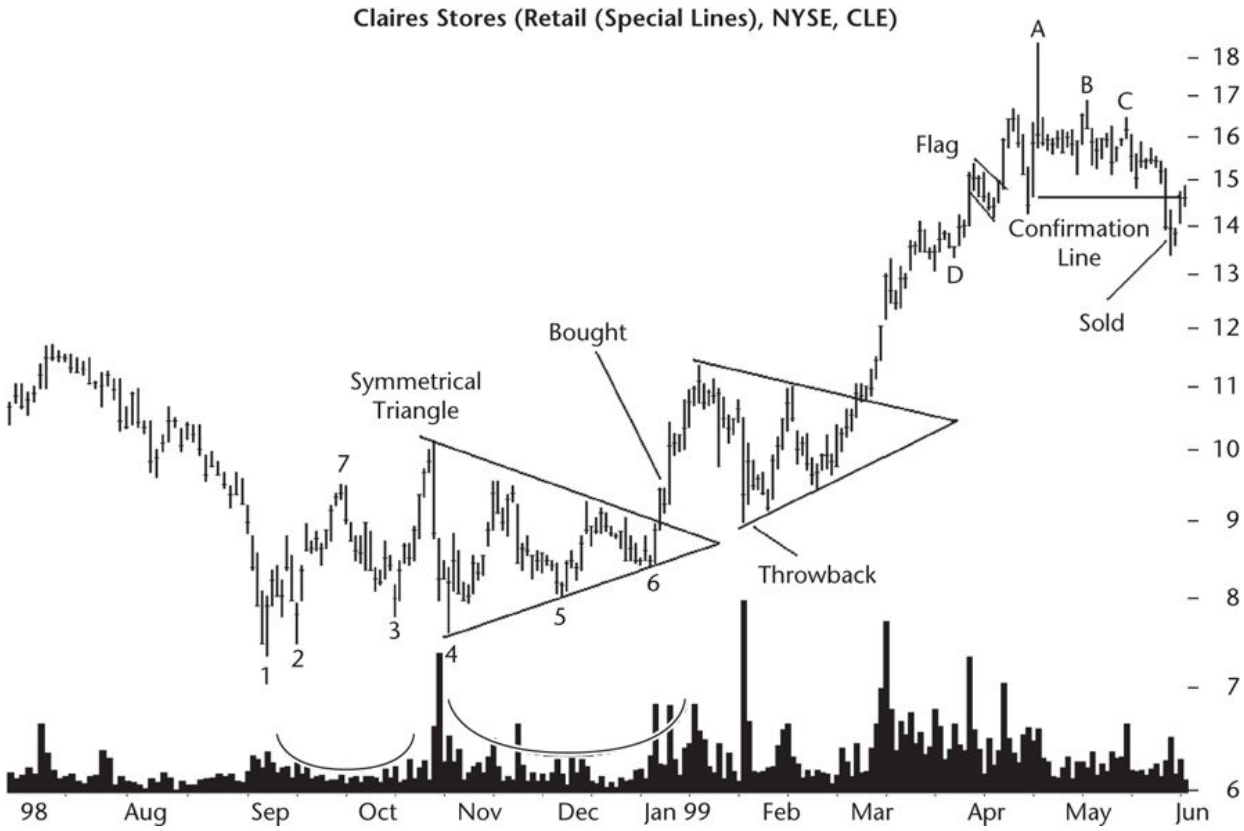


Figure 63.5 A three rising valleys pattern turned into a symmetrical triangle. As described in the Sample Trade, Joshua sold the stock when it started sinking lower with technical indicators showing divergence.

"I used the trendline break to signal an entry." When price closed above a trendline, connecting the peaks in the pattern, he bought and received a fill at 9.20.

He used the measure rule to predict a price target and came up with 11.66, the same height as the July top (far left). If he sold at that price, he would make 27%. Just below that was a solid line of resistance from March to May 1998 (not shown), at a price of 10.80 and rising to about 12. He suspected that the resistance zone would cause a throwback.

"I used a limit order to sell at 11.47," below the predicted target of 11.66 and below 11.50, where everyone else would put their orders. If triggered, he would make 25%.

Over the coming days, he watched the stock reach the resistance zone and then come tumbling down. It completed a throwback in mid-

January. Fortunately, price rewarded his patience when it resumed climbing.

It formed another symmetrical triangle, and when it broke out upward, “I removed the limit order. Why? Because the measure rule from the triangle [13.16] was above my sell price, I didn't want to limit profits in case it was correct.”

Price hit the new target but kept going up, pausing at D. Then it created a flag pattern that predicted a target of 16.19. Price hit that target 2 days after it pierced the top flag trendline. Price peaked at A and then made two successively lower lows, B and C. This was a three falling peaks pattern, and it spelled trouble.

“I checked my two favorite indicators, RSI and CCI. The RSI was in overbought range since March, showing a horizontal movement even as price climbed. CCI was even more dramatic. It peaked in March and then made successively lower peaks in April through May.” That divergence, where price moved up but the indicator moved down, signaled a sale.

The day after price pierced the three falling peaks confirmation line (the lowest low in the pattern), he sold and received a fill at 13.77 for a gain of 50% in about 4 months. The stock continued lower and reached bottom in October at 7.38.

64
Triangles, Ascending

RESULTS SNAPSHOT

Appearance: A triangle shape with horizontal top and up-sloping bottom.

Upward Breakouts

Reversal or continuation	**Long-term bullish continuation**		
Performance rank			
16 out of 39		Breakeven failure rate	17%
Average rise	43%		
Volume trend			
Downward		Throwbacks	64%
Percentage meeting price target	70%		
See also	Head-and-shoulders tops, three rising valleys, triple tops		

Downward Breakouts

Reversal or continuation	**Short-term bearish reversal**
Performance rank	30 out of 36
Breakeven failure rate	38%
Average drop	13%
Volume trend	Downward
Pullbacks	63%
Percentage meeting price target	44%

Have you ever heard someone say, “I just happened to be in the right place at the right time”? Perhaps you have even said it yourself. Investing is a lot like that—being in the right stock just before it takes off. The ascending triangle can show you where the right place is at the right time.

However, the Results Snapshot shows a pattern that doesn't perform up to the hype. The best performance rank is 16, where 1 is best, and that's for upward breakouts in bull markets. Downward breakouts are even worse, so don't go there. The breakeven failure rate rank (not shown) is dreadful for both up and down breakouts, ranking 27 and 35 (next to last), respectively.

At one time, this chart pattern used to be one of my favorites but no longer. It just doesn't perform as well as I'd hoped. Don't let my experience persuade you. Maybe you'll have better luck, especially in your market and using your trading style. Let's take a tour of the pattern first before I discuss the details.

Tour

Figure 64.1 shows a good example of an ascending triangle. A horizontal trendline drawn across the minor highs and an up-sloping trendline connecting the minor lows form the characteristic triangular pattern. Volume diminishes as price bounces between resistance at the top and support at the bottom of the pattern. A premature breakout gives a hint of the coming action; less than 2 weeks later, price breaks out again and moves higher.

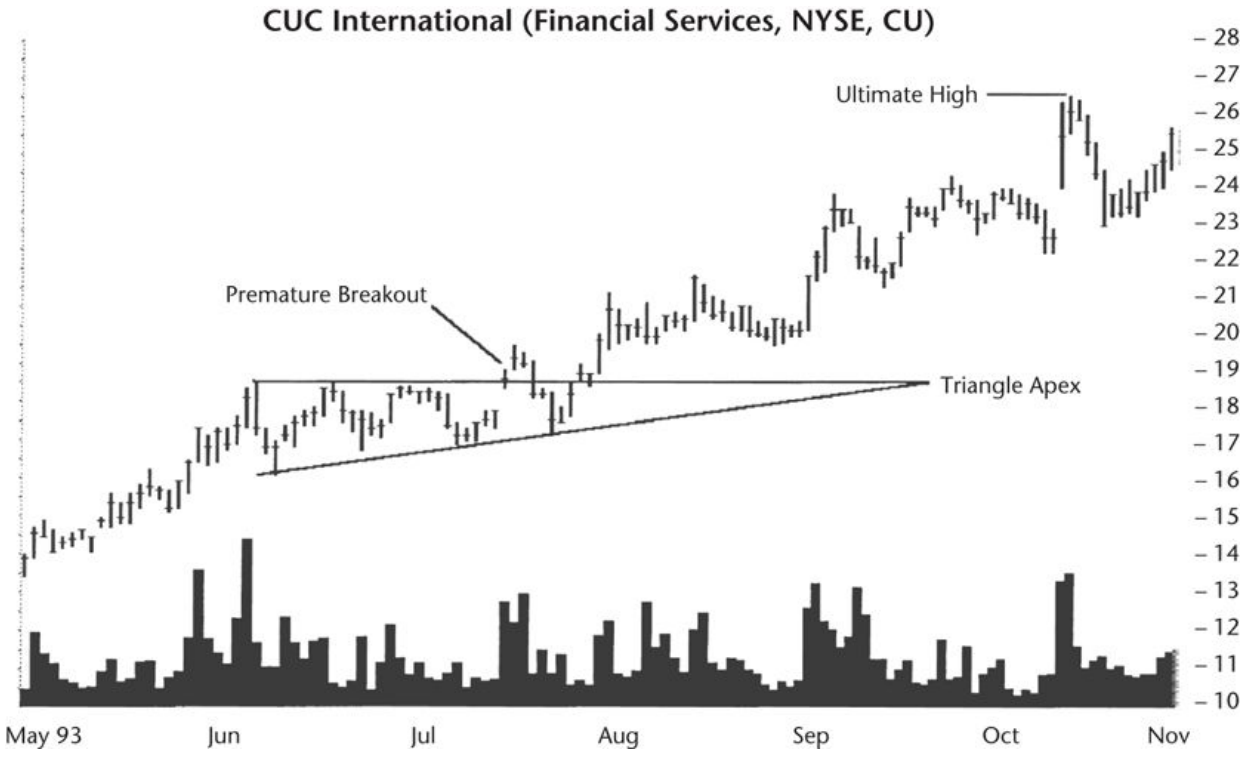


Figure 64.1 The horizontal top and up-sloping trendline on the bottom mark the boundaries of this bullish triangle. The premature breakout on high volume is often indistinguishable from the real breakout. The volume trend is downward until the premature breakout.

Why do ascending triangles form? Imagine you are the manager of a large mutual fund. Over the years your fund has purchased several hundred thousand shares of the company shown in the figure. After seeing the stock rise for almost a year, you are getting nervous about continuing to hold it. You believe the stock is trading well above its

fair market value, and you have spotted a more promising situation in another company.

You tell the trading department to dump all of your shares as long as it receives at least 18.50. For 2 days, starting on 4 June 1993, the trading department sells shares. Since your fund has a large block to get rid of, the price cannot climb much above 18.50 without the fund selling shares and forcing price down. The selling puts a ceiling on the stock.

Word gets around that you are selling, and other institutional investors jump on the bandwagon and sell, too. Their aggressive selling satiates demand, and the stock starts declining. It tumbles to a low of 16.25 on 9 June, where buying demand halts the decline. Buyers, viewing the price of the stock as a steal, demand more shares. The buying pressure turns the decline around and price starts rising—quickly at first but more slowly as additional investors become willing to sell their shares.

When the stock hits 18.50 again on 16 June, your fund sells more shares, effectively halting the advance. The stock struggles at that level for 3 days. Again, the selling pressure forces price down, and it crosses to the other side of the now-forming ascending triangle. Price rebounds one last time and hits the sell zone and stays there for about a week before being turned away by excess supply. A call from the trading department confirms they sold the entire position.

Without an overhanging supply to halt the stock's rise, price gaps up on increasing demand and soars to 19.25. Your fund is out of the picture, but the forces of supply and demand are not finished with the stock. Others still selling their shares force the stock back down into the triangle. Price races to the other side of the triangle, rebounds off the lower trendline, and marches out the top.

If I had to sum up the price action of an ascending triangle, I would say it forms because of a supply of shares available at a fixed price. Once the supply depletes, shares quickly break out of the triangle and move higher. If demand continues to be strong, price rises. Otherwise, the stock collapses back on itself and either regroups for another try or continues down.

Identification Guidelines

Finding an ascending triangle in a chart of daily price data is simple, perhaps too simple. I read a tutorial in a popular magazine in which nearly half the illustrations purporting to be triangles were identified incorrectly.

If you have any doubt about the validity of a chart pattern, others may share those doubts. If others do not see the same shapes you do, the pattern may not work as well as you expect. Under those circumstances, where there is some doubt about correct identification, do not trade the chart pattern. Save your money for a trade where you are sure the pattern is valid. I discuss identification problems later in this section. For now, **Table 64.1** lists ascending triangle characteristics.

Appearance. The triangle pictured in Figure 64.1 is nearly a classic example of an ascending triangle. The horizontal top line of resistance repels price, and it rebounds off a steadily rising support line below. The two converging trendlines, one horizontal and the other sloping up, outline a triangular shape. The ascending trendline predicts a rise in price, hence the name *ascending triangle*.

The only problem with this triangle is with the (premature) breakout. If the pattern had behaved itself, the stock would have continued higher instead of going back into the triangle for more work to do.

Trendlines. Price should touch (or near) the trendlines a total of five or more times. That's three touches of one trendline and two on the other. Each touch should be a minor high or minor low. If price slices through the trendline at the start of the triangle, it's not a valid touch because it doesn't occur at a minor high or low. The five-touch rule helps prevent identifying bogus patterns. I'll explain common flubs later.

Crossing pattern. Price should cross the pattern several times, not hug one of the trendlines like a tightrope walker. The pattern should be filled with price movement, not whitespace. Cutting off a price turn and calling it a triangle is a common selection error.

Table 64.1 Identification Guidelines

Characteristic	Discussion
Appearance	Two price trendlines, the top one horizontal and the bottom one sloping up, form a triangle pattern. The two lines join at the triangle apex.
Trendlines	The top trendline in the pattern is horizontal. The one on the bottom slopes upward. Price must touch the two trendlines a total of five or more times (three on one trendline and two on the other). Each touch should be a minor high or minor low.
Crossing pattern	Price should cross the triangle several times, covering the whitespace with price movement.
Premature breakouts	Somewhat prone to premature breakouts, both up and down. Volume on a false breakout is also heavy, just as the genuine breakout.
Breakout direction	The breakout can be up or down. It occurs a median of 64% of the way to the triangle's apex.
Volume	Volume is heavier at the start of the triangle than near its end. Volume is usually low just before the breakout, but need not be.

Premature breakouts, breakout direction. How can you be sure the breakout is not a premature one? You cannot. A premature breakout happens when price closes (or even the high price pokes its nose) outside the boundary of one of the trendlines. After a few days, price returns to the confines of the triangle and eventually breaks out for good by moving outside the trendline.

Volume on premature breakouts is indistinguishable from normal breakouts, and both occur at about the same distance to the triangle apex. I don't worry about premature breakouts anymore. In fact, I consider them as the actual breakout, providing price *closes* outside the trendline boundary.

Volume. As the triangle forms, volume is heavy at first but tapers off until the day of the breakout. Often volume is abnormally low a few days before the breakout, as if the triangle is gathering strength for the final push. When the breakout comes, volume can rise

substantially and usually does, but heavy breakout day volume is not a prerequisite.

Identification Challenges

By now you may feel comfortable with correctly identifying an ascending triangle. However, there are some situations that may fool people new to the pattern. **Figure 64.2** shows the first one. Cover up the right half of the figure and ask yourself if what you see on the left looks like an ascending triangle.

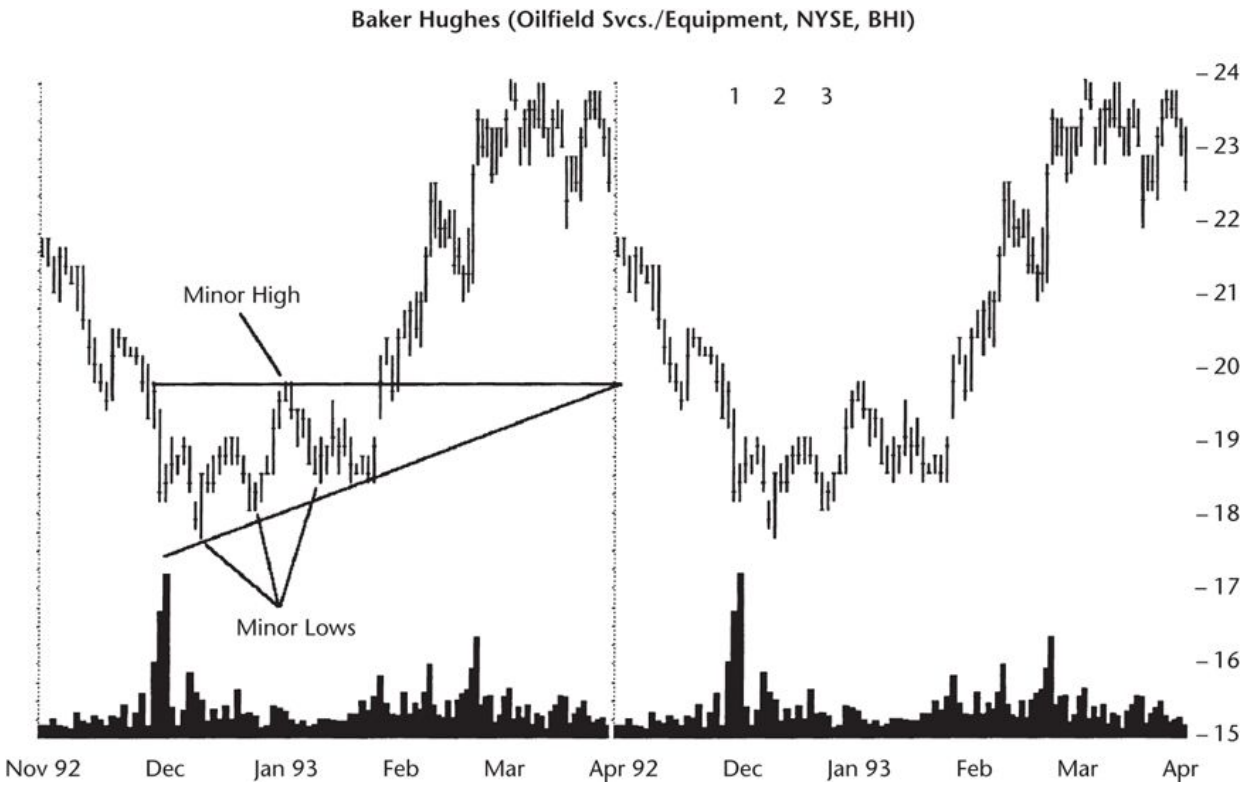


Figure 64.2 Two views of an incorrectly identified ascending triangle. What looks like an ascending triangle on the left is not a valid triangle on the right. The three downward spikes in December, identified by the numbers near the top of the figure, mark a head-and-shoulders bottom with a horizontal neckline, not a triangle.

The horizontal line, drawn to rest on top of the central peak, extends to the left and right until it intersects price. Although the lower trendline has several instances where price declines to and bounces off from the trendline, the top trendline does not show the same type of touches.

Looking at the right side of the chart, does this still look like an ascending triangle? I can hear you asking me to lower the horizontal

trendline until it touches the two minor highs in early to mid-December (below number 1 and midway between numbers 2 and 3—at the top of the chart). That is not a bad guess, but it results in just four trendline touches and not five.

What you are really looking at is a head-and-shoulders bottom. The left shoulder has a large volume spike (under number 1). Located under number 2, the head shows a smaller volume spike. The right shoulder shows volume that recedes even further (number 3). A true ascending triangle has at least five trendline touches, three on one trendline and two on the other. This pattern only has one top trendline touch at the central minor high. At the start and end of the pattern, price touches the top trendline but not at a minor high, so the two touches doesn't count. It's not a valid ascending triangle.

Figure 64.3 shows another example of a falsely identified ascending triangle. This chart has too much whitespace in the central portion of the triangle. A well-defined ascending triangle has price that bounces from top to bottom plenty of times, filling the whitespace.

Study the figure. It illustrates one of the most common identification mistakes. Novices will find a rounding bottom (like that shown from January to March) and draw a horizontal line across the top and another tangent to the bottom price action, then yell, “Eureka! An ascending triangle!”

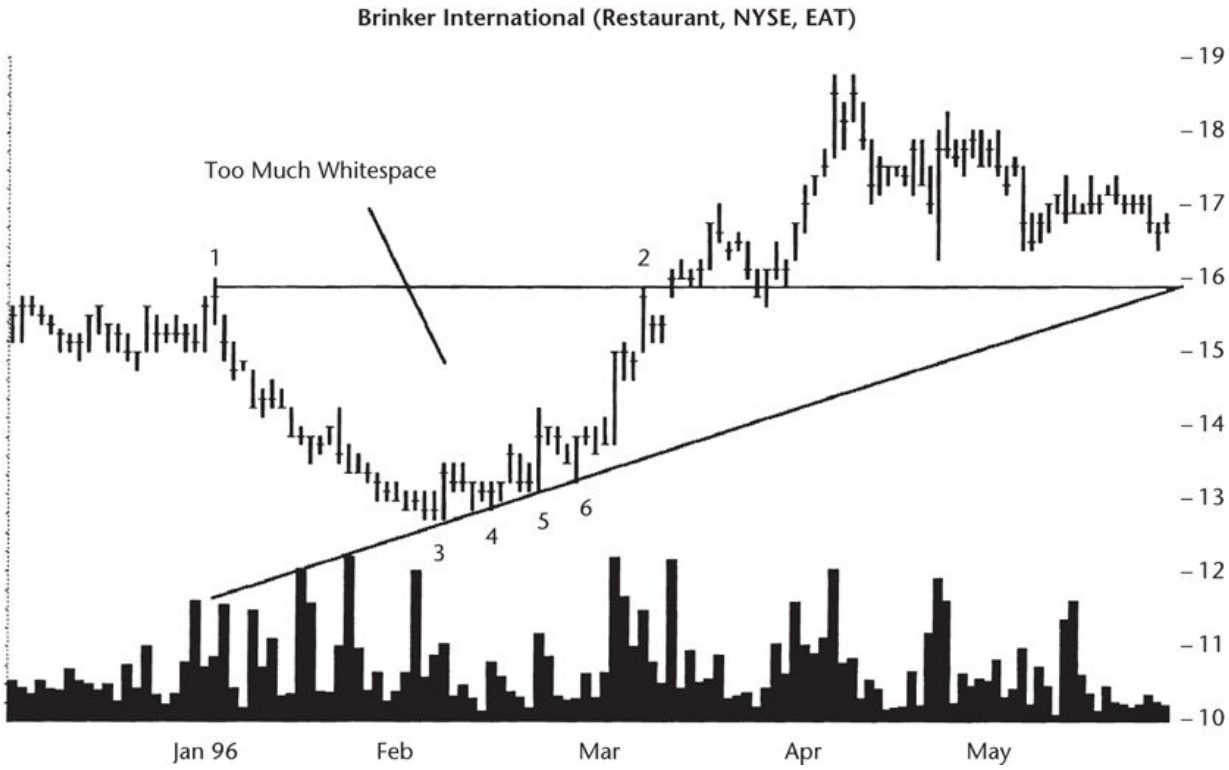


Figure 64.3 This pattern is not a valid ascending triangle. There are not enough crossings between the two trendlines to illustrate a valid triangle construction. The minor highs and lows are numbered.

Wrong.

Contrast Figure 64.3 with **Figure 64.4**. Figure 64.4 sees price crossing the pattern a number of times, erasing the whitespace. Even though price does not rise very far before throwing back to the triangle apex and moving down, it is still a nicely formed ascending triangle. Also note the generally decreasing volume trend, especially near the breakout.

Focus on Failures

Figure 64.4 shows the first failure type: a 5% failure. Strictly speaking this is not a 5% failure (because price climbs 6%), but it is typical of what one looks like. A 5% failure happens when price breaks out and moves no more than 5% before curling around and shooting out the other side of the triangle.

In this case, price leaves the triangle at 6.13 and reaches a high of 6.50—a 6% move before dropping and closing below the bottom of the pattern, busting the upward breakout.

Most failures of this type have two causes. The first is overhead resistance, and it is easy to spot. Look for peaks or valleys sharing a common price or a solid block of horizontal price movement. Chart patterns, trendlines, and other technical patterns also set up resistance areas. Before investing in a pattern, always check for overhead resistance.

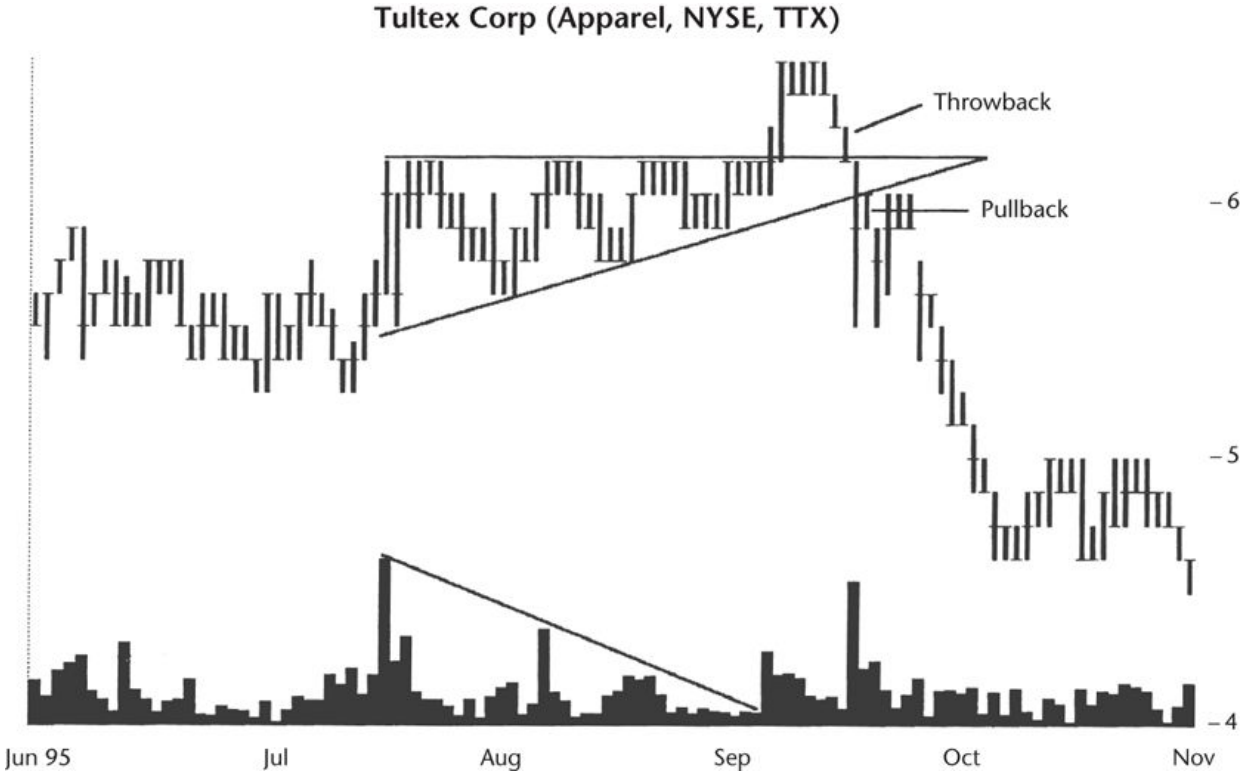


Figure 64.4 An excellent example of a correctly constructed ascending triangle. The number of minor highs and lows is good, and there are plenty of crossings from the top trendline to the bottom. Volume trends downward, too, until the upward breakout.

The second cause of failure is when the general market swings against the breakout direction. If the breakout is upward and the market turns down, that may be enough to kill a profitable trade in your stock by blunting the advance and sucking the stock down along with the general market.

A failure can also happen with stocks in the same industry. If competitor's stocks are going down and yours is the lone holdout, chances are your stock will join the party and tank as well. Check the market and check stocks in the same industry before trading.

Statistics

Table 64.2 shows general statistics.

Number found. Over the decades, I catalogued 1,678 ascending triangles from 811 stocks with the first pattern found in July 1991 and the most recent in March 2019. Not all stocks covered the entire period, and some no longer trade. As the numbers show, most patterns have upward breakouts, and I don't show bear market patterns, either. They were too few to include.

Reversal (R), continuation (C) occurrence. Triangles with upward breakouts act as continuation patterns 60% of the time and reversals the remainder. Downward breakouts show nearly the reverse with reversals outnumbering continuations.

Reversal/continuation performance. Reversals and continuations show no performance difference after an upward breakout. Downward breakouts tend to drop farther if the triangle acts as a continuation of the downward price trend.

Average rise or decline. The 43% rise is slightly above the 42.4% average for all chart patterns. Downward breakouts fall well short of the 14.9% average drop for all chart pattern types.

Table 64.2 General Statistics

Description	Up Breakout	Down Breakout
Number found	899	531
Reversal (R), continuation (C) occurrence	40% R, 60% C	61% R, 39% C
Reversal, continuation performance	43% R, 43% C	–11% R, –15% C
Average rise or decline	43%	–13%
Standard & Poor's 500 change	12%	–2%
Days to ultimate high or low	229	50
How many change trend?	51%	23%

Standard & Poor's 500 change. Compare the market numbers with the average rise or decline. When the market is bullish, it helps upward breakouts rise. Downward breakouts see a falling general market help price drop.

Days to ultimate high or low. Upward breakouts take substantially longer to reach the ultimate high than downward breakouts take to reach the ultimate low. Let's check the velocity of the two breakout directions: The drop is 40% faster than the rise.

How many change trend? This is a count of how many patterns see price move more than 20%. When compared to other chart patterns, both up and down breakout numbers are below average. I think that's a warning of underperformance.

Table 64.3 shows failure rates for ascending triangles. Downward breakouts have higher failure rates than upward breakouts. Read the table as follows: 17% of ascending triangles with upward breakouts in bull markets fail to see price climb more than 5% after the breakout. About half (49%) fail to rise more than 20%.

Downward breakouts are far worse performers. More than half (55%) of the triangles will fail to see price drop more than 10%. I would not consider shorting a stock showing an ascending triangle with a downward breakout unless the situation was compelling (like someone held a gun to my head).

Notice how the failure rates climb for small changes in the maximum price rise or decline.

Table 64.4 shows breakout-related statistics.

Breakout direction. Most *ascending* triangles will break out upward (see price ascend), hence the name. That's backed up by the numbers in the table.

Yearly position, performance. The best performing triangles have breakouts near the yearly high (upward breakouts) or low (downward breakouts). For upward breakouts, you gain a 28% advantage by trading a triangle within a third of the yearly high (versus near the yearly low).

Table 64.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Up Breakout	Down Breakout
5 (breakeven)	153 or 17%	203 or 38%
10	126 or 31%	87 or 55%
15	85 or 40%	58 or 66%
20	80 or 49%	61 or 77%
25	51 or 55%	41 or 85%
30	37 or 59%	31 or 91%
35	42 or 64%	15 or 93%
50	80 or 73%	27 or 98%
75	85 or 82%	8 or 100%
Over 75	160 or 100%	0 or 100%

Table 64.4 Breakout and Post-Breakout Statistics

Description	Up Breakout	Down Breakout
Breakout direction	63% up	37% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 36%, M 42%, H 46%	L –15%, M –14%, H –10%
Median breakout distance to apex	64%	64%
Throwbacks/pullbacks occurrence	64%	63%
Average time to throwback/pullback peaks	6% in 6 days	–4% in 6 days
Average time to throwback/pullback ends	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	38%	–11%
Average rise/decline for patterns without throwbacks/pullbacks	51%	–17%
Percentage price resumes trend	69%	45%
Performance with breakout day gap	41%	–14%
Performance without breakout day gap	43%	–13%
Average gap size	$0.33	$0.49

Downward breakouts provide evidence that you should short stocks making new lows rather than those making new highs.

Apex distance. I compared the time to the breakout with the length of the triangle from the start to the apex. The median breakout distance is 64% of the way to the apex.

Throwbacks and pullbacks. Throwbacks and pullbacks occur almost two-thirds of the time and take 12 days for the stock to return to the breakout price. When a throwback or pullback happens, performance suffers and quite dramatically, too.

After a throwback or pullback completes, the table shows that both upward and downward breakouts see price rise most often (69% for upward breakouts and 55% for downward ones). The 55% number

isn't a typo because 45% of triangles continue lower and the rest move higher.

Gaps. The performance difference for patterns with and without gaps isn't large enough to twist our knickers.

Table 64.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones for both breakout directions. For example, tall triangles in bull markets with upward breakouts show rises of 47%. Short ones rise just 39% on average.

Table 64.5 Size Statistics

Description	Up Breakout	Down Breakout
Tall pattern performance	47%	–16%
Short pattern performance	39%	–9%
Median height as a percentage of breakout price	9.5%	9.4%
Narrow pattern performance	43%	–10%
Wide pattern performance	43%	–16%
Median width	44 days	43 days
Short and narrow performance	39%	–9%
Short and wide performance	40%	–10%
Tall and wide performance	45%	–18%
Tall and narrow performance	51%	–13%

To make use of this finding, compute the height of the triangle from the top trendline to the lowest low at the start of the triangle. Divide the height by the breakout price (the price where the stock crosses one of the trendlines). If the result is greater than the median shown in the table, then it's a tall triangle.

Width. Width is not as robust a predictor of performance as height. Wide patterns see better performance but only after a downward breakout. I used the median length as the separator between narrow and wide.

Height and width combinations. Which combinations of height and width perform best? Anything tall outperforms anything short (on average), but see the table for the best results. You'll want to avoid patterns that are both short and narrow.

Table 64.6 shows volume-related statistics.

Volume trend. Linear regression of volume from the pattern's start to its end says that volume trends downward the vast majority of the time. Remember you heard it here first.

Table 64.6 Volume Statistics

Description	Up Breakout	Down Breakout
Volume trend	80% down	78% down
Rising volume trend performance	49%	–11%
Falling volume trend performance	42%	–13%
Heavy breakout volume performance	44%	–13%
Light breakout volume performance	41%	–13%

Rising/Falling volume. Upward breakouts with a rising volume trend see much better performance than those with falling volume. However, we're talking about 20% of the samples with a rising volume trend (that's 177 versus 772). So this result could be because of a lack of samples.

Breakout day volume. Heavy breakout volume helps push price in triangles with upward breakouts to better performance. The push isn't as significant as many imagine, but that's because they probably haven't studied volume like I have (nor offered proof for their beliefs). Another way of saying that is, aren't statistics wonderful? There's an old joke which goes, 90% of statistics are worthless.

Table 64.7 shows how often price reaches a stop location, but it only applies to upward breakouts (because my computer gives misleading results for downward breakouts). I checked how often price returned to the triangle *on the way to the ultimate high*.

If you were to set a stop-loss order at the top of the pattern, an upward breakout would trigger it 73% of the time. You might think that's low, but remember that if price *reaches* the ultimate high as it prepares to throw back, then I stopped the search for price hitting the stop.

Table 64.8 shows the performance over three decades.

Performance over time. The worst performance happened in the 2010s for both breakout directions. The 1990s showed the best performance. Check the table for the exact numbers.

Failures over time. Both breakout directions saw failures climb over the last 3 decades. Almost half (47%) of patterns with downward breakouts failed. By "failed," I mean they failed to see price move more than 5% after the breakout.

Table 64.9 shows busted pattern performance.

Busted patterns count. If you like to trade busted patterns, then set your sights on downward breakouts. Almost half will bust.

Busted occurrence. I sorted busted patterns by how many times they busted. Singles busts placed first for frequency. Upward breakouts saw double busts coming in second, but downward breakouts saw triple+ (two or more) busts placing second. I've seen that in other chart patterns, too, so no need to dial 9-1-1.

Table 64.7 How Often Stops Hit

Description	Up Breakout
Pattern top	73%
Middle	24%
Pattern bottom	4%

Table 64.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	47%	–17%
2000s	47%	–11%
2010s	35%	–11%
Performance (above), Failures (below)		
1990s	14%	19%*
2000s	18%	44%
2010s	21%	47%

* Fewer than 30 samples.

Table 64.9 Busted Patterns

Description	Up Breakout	Down Breakout
Busted patterns count	261 or 29%	242 or 46%
Single bust count	130 or 50%	161 or 67%
Double bust count	89 or 34%	12 or 5%
Triple+ bust count	42 or 16%	69 or 29%
Performance for all busted patterns	–13%	36%
Single busted performance	–22%	51%
Non-busted performance	–13%	43%

Busted and non-busted performance. I compared busted and non-busted patterns to see which performed best. Envelope, please. The winner is: single busted patterns! The problem with this finding is you have to pick a triangle that single busts (only). I haven't found a way to sort out single busts for other busts. I'll leave that as an exercise for the reader. I will say that 67% of downward breakouts will single bust, so that's a big trading edge.

Trading Tactics

Table 64.10 shows trading tactics.

Now that you can identify ascending triangles and know their behavior, how do you trade them? Before I give an example of a trade, let's discuss trading tactics and the measure rule.

Measure rule, targets. The measure rule sets a price target, so we can check the probability of price actually reaching the target.

Compute the height of the triangle from the top trendline to the lowest low near or at the start of the triangle. For upward breakouts, add the result to the price of the horizontal trendline. For downward breakouts, subtract the height from the breakout price to get the target.

An example for upward breakouts makes the calculation clear. Consider the stock shown in **Figure 64.5**. Calculate the height of the triangle by subtracting the low (14.38 at the first minor low) from the high (17.63 denoted by the horizontal trendline) at the triangle's start. The difference is 3.25.

Add the result to the highest high—the value of the horizontal trendline—and you get a target price of 20.88. Price reaches the target in mid-July 1992, when it climbs to a high of 21.63, about 6 weeks after the upward breakout.

A more visual approach is to draw a line from the start of the triangle (the top-left corner) parallel to the up-sloping trendline. The value of the line the day price breaks out of the triangle becomes the target price. The figure shows the diagonal line. Be careful when determining where the triangle begins because tagging the start of the pattern too soon will cause an abnormally high price target.

The bottom portion of the table shows how often price reaches the target. If you use the full height, as we did in the example, price will reach the target 70% of the time on average. You can use other heights (half, double) in the measure rule, and the table shows the success rate.

Table 64.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the height of the chart pattern at the start of the triangle. Add the result to the price of the horizontal trendline (upward breakout) or subtract it from the breakout price (downward breakout). The result is the price target. The bottom portion of the table shows how often price reaches the target on average.
Wait for breakout	Buy (or sell short) the stock when price closes beyond the trendline.
Support and resistance	Support and resistance may follow the trendline boundaries well into the future. See Figures 64.6 and 64.7.
Stop location	See Table 64.7 for guidance on stop placement.
Busted trade	Downward breakouts that bust can lead to large gains.
Apex Turning	When price reaches the date of the apex, expect a minor high or low to appear. It might become a major turning point for the stock.

Description	Up Breakout	Down Breakout
Percentage reaching half height target	85%	67%
Percentage reaching full height target	70%	44%
Percentage reaching 2× height	51%	21%
Percentage reaching 3× height	40%	10%

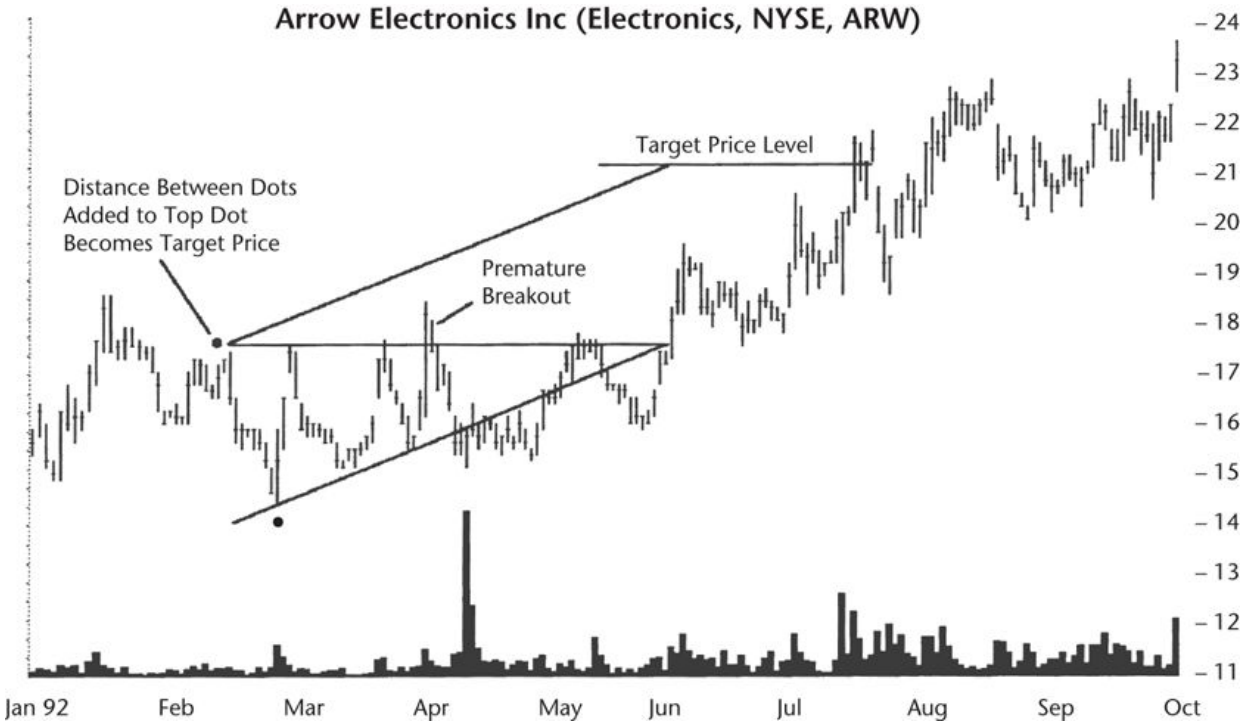


Figure 64.5 There are two ways to set a price target for an ascending triangle. Compute the triangle's height by subtracting the low from the high at the start of the triangle (denoted by the two black dots). Add the result to the price marked by the top trendline. The result is the target. Alternatively, draw a line parallel to the up-sloping trendline beginning with the left top corner of the triangle. At the point where price breaks out of the triangle, the price level of the line becomes the target.

Once you know the target, measure the distance, divide it by the current price expressed as a percentage, and compare it to the values in Table 64.3.

Using the values from our example, the distance to the target measures 3.25 and the breakout price (as our current price) of 17.63 gives 3.25/17.63 or 18%. Let's call it 20%. Table 64.3 says that in bull markets after upward breakouts, the stock will fail 49% of the time to see price climb more than 20%. So the chance of having a failed trade would be a bit less than 49% (probably closer to 45%). Flip it around (gently, don't hurt it) and we find price should reach the target about 55% of the time on average.

Wait for breakout. Thirty-seven percent of triangles break out downward, but the actual breakout direction is unknown ahead of

time. If price closes above the top trendline or below the up-sloping trendline, that occurrence signals a breakout. For the lowest risk of a failed trade, wait for the breakout before trading the stock.

Support and resistance. If you consider the triangle as the momentary intersection of two trendlines, you can guess where support and resistance will be. It will be along the two trendlines, extended into the future.

Figure 64.6 shows an example of this behavior on the weekly time scale. Notice the generally down-sloping volume trend from the triangle's start to the week before the breakout.

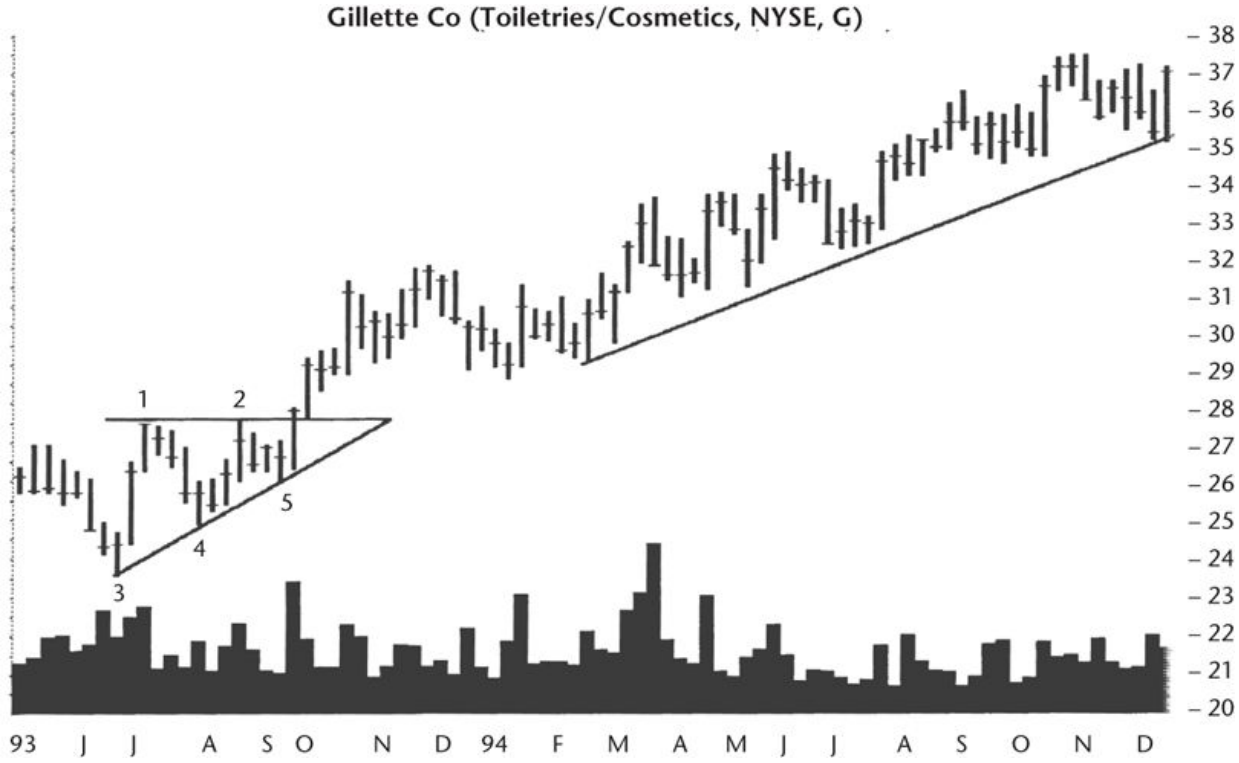


Figure 64.6 Ascending triangle on the weekly time scale. The price rise generally follows the up-sloping support line of the triangle. The numbers count the minor high and low touches of the trendline.

Volume spikes upward on the breakout and then generally declines as price rounds over and approaches 1994. Price starts climbing again, essentially hugging the trendline started by the ascending triangle. The upward trend continues for several years following the triangle-initiated support line. Although the match between the sloping

trendline and the slope of the later price action is not exact, the support is clear.

Stop location. Use the information from Table 64.7 as guidance to help locate a stop-loss order. Once you have decided where to place a stop, change the potential loss into a percentage of the current price. If you start sweating, then consider moving the stop or abandoning the setup (trade) altogether.

Busted trade. Downward breakouts that single bust can lead to a large gain. Consider trading busted downward breakouts for a big potential rise. Of course, if the triangle doesn't single bust, then don't trade it (that's a variation of a Will Rogers joke).

Apex Turning. Look back at Figure 64.4. Draw a line from the apex of the triangle (that is, where the two trendlines join) directly downward until it intersects price. Notice how the stock turns there (it stops going down).

I measured how often this works and wrote an article about it on my website (http://thepatternsite.com/Apex.html). I concluded, “Price reaches a minor high or minor low 75% of the time within a few days of the triangle apex. Price turns from down to up or up to down 60% of the time.”

If you draw your triangle accurately enough, then you'll know where price may turn by looking at the apex.

Experience

I've traded ascending triangles 44 times and made money 55% of the time. I rarely trade them now because I don't consider them a reliable chart pattern. Let me share with you a few lessons.

Andrew Corp., Kenneth Cole Productions, and Park Electrochemical

Andrew Corp. (ANDW), Kenneth Cole Productions (KCP), and Park Electrochemical (PKE): In all of these stocks, I bought inside the ascending triangle, before the breakout. The stock broke out downward instead of the expected upward direction. I sold quickly and took a small loss in each of them.

- Lesson: Wait for the breakout before buying.

Proctor & Gamble

In Proctor & Gamble (PG), in early 2007, I sold the stock on a downward breakout from an ascending triangle. The stock dropped a paltry 3.5% before recovering and making a new high, climbing 19% above my sale price.

- Lesson: Before selling, try to determine how far down price is likely to drop. If it's a lot, then sell. If not, consider riding out the decline. Only attempt this if the market and industry are both trending in a direction favorable to your trade (if you're bullish and the market and industry are also bullish, it'll help).

American Electric Power

In American Electric Power (AEP), I bought on an upward breakout from an ascending triangle but “Upside is limited, though,” I wrote in my trading notebook. If the upside was limited, why did I want to buy the stock?

The stock and industry showed terrific relative strength (relative to other stocks and other industries, *not* Wilder RSI). I raised my stop once, and the stock snagged it when it busted the upward breakout. I took a 4% loss but that was a blessing. About 3 weeks after I sold, the

bear market grabbed onto the stock and dragged it under by 46% below my sale price.

Beazer Homes USA

I faced the same situation with Beazer Homes USA (BZH). I sold a week after buying in a bear market and took a loss when the upward breakout fizzled. I sold the stock at 50.30, and the stock bottomed at $1.25, a drop of 98% below where I sold.

Cisco Systems

Cisco Systems (CSCO) was one of those trades where I felt I would lose money but traded it anyway. What happened?

I lost money (just 3%)!

In my trading notebook, I wrote, “I don't think this trade will work out. I get the feeling that this will break out downward and tumble. Hopefully, my stop will not be hit if that's the case.”

The triangle broke out upward in late 2007, I bought in, and it wobbled up and down before taking me out on a one-day selloff when the Dow industrials dropped 365 points (which was big for that time). About two weeks after I sold, the stock started tumbling from 31.83 where I sold to a bear market low of 13.61 (57% lower).

- Lesson: Keep your losses small before they become huge.

Celadon Group

In Celadon Group (CLDN changed to CGI) the reverse happened. I bought at the breakout, the stock dropped to the other side of the triangle, hitting my stop and taking me out of the trade.

It double busted the upward breakout by dropping for a week before climbing 54% (in a bear market, too) above my sale price. I was right in calling the direction (buying the upward breakout) with a good upside potential, but I didn't expect the stock to bust. My spreadsheet says I made a perfect entry and perfect exit on this trade.

- Lesson: Sometimes trades go wrong. I traded the stock perfectly but lost money (trading well helps avoid creating bad habits).

National Fuel Gas

National Fuel Gas (NFG) made an ascending triangle less than 2 months after exiting the bear market in 2009. I bought a small position in the stock. Nice timing.

The stock had trouble deciding on a direction. It moved up some, then reversed and dropped about the same amount as it had climbed. It didn't hit my stop, but the stock recovered and resumed the uptrend.

As it climbed, it made a measured move up chart pattern. That allowed me to set a price target at the top of the second leg. From my notebook: “The latest price tops the projection by 5 cents. Since today made a lower high, and quarterly [earnings] are coming, I expect bad news since other oil venues are suffering. Time to take the gain and exit. This has reached my 38-to-41 target.”

I sold at 40.54 for a 24% profit. Two weeks later, the company surprised with better-than-expected earnings, and the stock went vertical for two days, then continued moving higher at about 30 degrees.

I had a perfect entry and perfect exit according to my trading plan, but I left 34% additional profit unclaimed because I sold too early. Of course, if earnings had gone the other way, selling when I did would have been timely. I made the right choice.

- Lesson: If you can time the market transition from bear to bull, you can make big gains.

Pfizer

With Pfizer (PFE) in 2005, the stock formed an ascending triangle. From my notebook: “This has moved beyond the breakout, but I consider it a good buy. This also pays a dividend, and I consider it a longer term holding. Keep the stop farther away to let this work higher.”

Getting in late (5% above the breakout) meant bad news when the stock crested 2% above where I bought and eased lower. The stock hit my stop, and I took a 6% loss. The stock continued down another 25% below my buy price. I did collect one dividend payment, though.

- Lesson: If you can't buy in at the breakout price, then consider abandoning the trade unless there's a compelling reason to buy (like after a throwback completes or if you plan to hold for a long time).

Lest these trades made you think I didn't make much money trading ascending triangles, I bought Balchem Corp. (BCPC) using a buy stop above the breakout price. It triggered on the day of breakout in mid-2012, and I rode the stock upward for a 43% gain. In Headwaters (HW) I made 54%, Health Management Systems (HMSY) 34%, Textron (T) 44%, and 67% in XL Group.

Sample Trade

Dan is an investor with a few years of market experience. He is new to technical analysis and discovered ascending triangles by accident. Fortunately, car insurance covered the damages.

After doing some research to familiarize himself with the pattern, he found that if he delayed buying a stock until after a breakout, he would increase his chances of success. However, he would also give up part of his gains because the fastest portion of the rise occurs at the start. That was a trade-off he was willing to make.

Dan took an interest in the company shown in **Figure 64.7** when he noticed an ascending triangle forming in the stock. “I suspected that the breakout was coming when volume collapsed to 23,400 shares on 19 August. I was right.”

Two days later, on higher volume, price crossed the triangle and peeked out the top. For the next few days, price balanced itself on the top horizontal trendline and waited for demand to send it higher. The decisive breakout occurred on 26 August, even though volume was tepid.

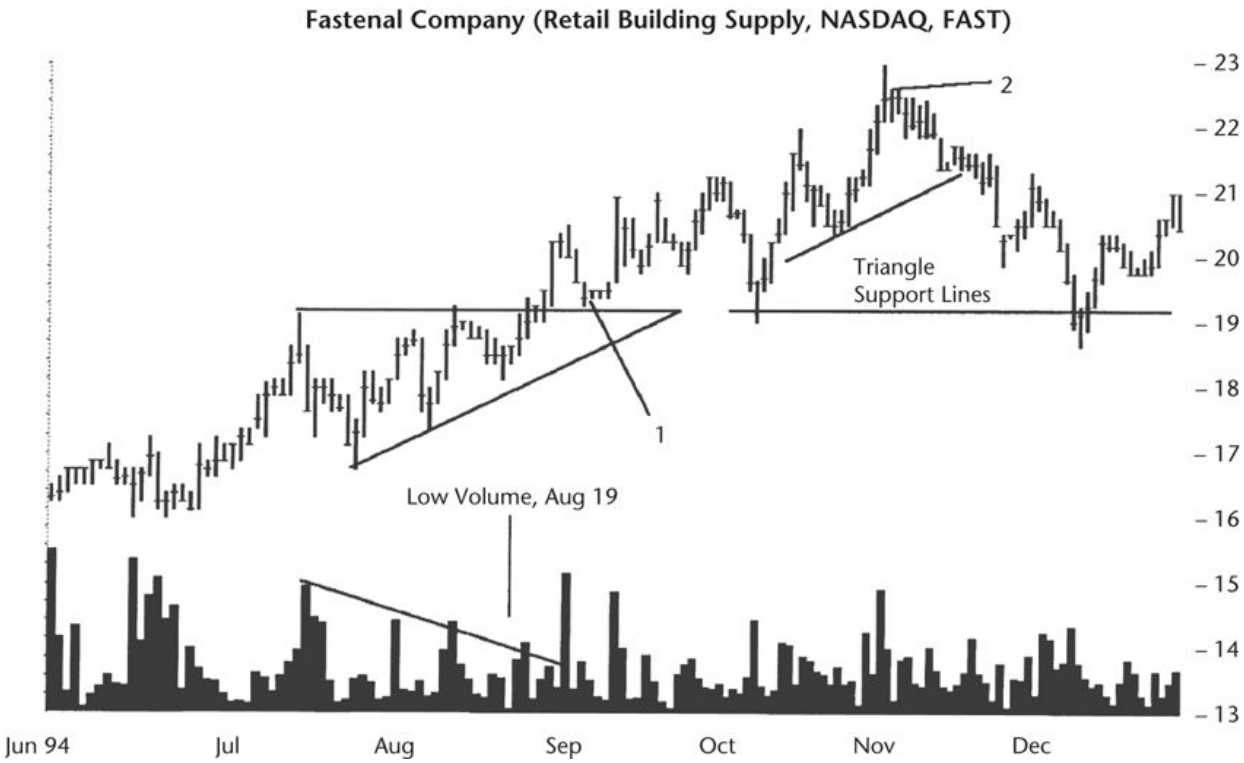


Figure 64.7 Trading an ascending triangle. As described in the Sample Trade, Dan bought 500 shares of the stock at point 1 after the stock threw back to the triangle. He sold it at point 2, the day after the stock hit the price target of 22.50. Note the down-sloping volume trend during creation of the triangle and the two support lines parallel to the two triangle borders.

"I grabbed my calculator and computed the breakout distance to the apex. It happened at the 70% mark. That signaled a potentially strong breakout. However, volume told a different story."

Although volume had been steadily receding throughout the triangle as one would expect, there was no enthusiastic volume on the breakout. "I decided to wait before buying."

Believing that a profitable opportunity was at hand, he computed the target price to see if it afforded a profitable move. The predicted price of 22.50 was 15% above the 19.25 launch price. To Dan, the small move was not terribly exciting, but it was much better than the interest rate banks were paying.

Two days after the breakout, the stock started declining and returned to the top of the triangle. "That's when I bought 500 shares at the

high for the day, 19.50 [point 1]. I placed a stop-loss order 15 cents below the lowest low of the triangle. That would limit my loss to a steep 15%, but it was also just below the nearest support level [the bottom of which was at 16.75]. I thought there was a decent chance that if the stock declined, growing demand would repulse price and not trigger my stop. Still, it was a concern."

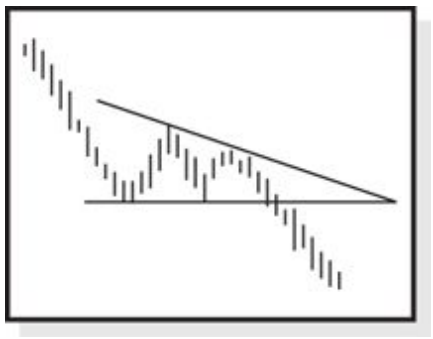
Then he waited and watched. The stock peaked at 21.25 on 26 September before leveling off and heading back down. Since the stock was not near the price target of 22.50, Dan decided to hold on. The stock continued sinking until it found support at the horizontal triangle trendline at 19 on 5 October.

The stock started moving up again. On Halloween, the stock reached his price target by hitting a daily high of 23. He decided to sell the stock the next day and received a fill at 22.50.

Dan had a net gain of $1,450 or almost $3 a share. That is a 15% gain in 2 months. He also decided that he was lucky when he sold near the top.

When the stock returned to the support level in early October, it could have continued down. He decided that once a stock climbed by 10%, he should raise his sell stop to break even, even though in this case it would have cashed him out prematurely.

65
Triangles, Descending



RESULTS SNAPSHOT

Appearance: Triangle shape with horizontal bottom and down-sloping top.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Intermediate-term bullish continuation	Intermediate-term bullish continuation
Performance rank	33 out of 39	7 out of 20
Breakeven failure rate	22%	22%
Average rise	38%	30%
Volume trend	Downward	Downward
Throwbacks	60%	64%
Percentage meeting price target	64%	45%
See also	Head-and-shoulders tops, three falling peaks	

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Performance rank	15 out of 36	15 out of 19
Breakeven failure rate	23%	13%
Average drop	15%	21%
Volume trend	Downward	Downward
Pullbacks	58%	61%
Percentage meeting price target	50%	45%

The Results Snapshot shows the important statistical results for descending triangles. For the highest average rise, your best bet is to trade triangles with upward breakouts in bull markets. In bear markets, the descending triangle with an upward breakout does well, with a performance rank of seventh where a rank of 1 is the best.

Bear markets with downward breakouts have the lowest failure rate rank (not shown, 14 out of 19 where 1 has the fewest failures). The failure rank is a count of how many descending triangles fail to see price move more than 5% after the breakout when compared to other chart patterns.

Volume trends downward most often as the snapshot shows. Throwbacks and pullbacks happen less often than we see in other chart patterns (which is about 66%). The “percentage meeting price target” needs work, too. By cutting the height used in the measure rule, we can improve the target accuracy. We'll see how to do that in Trading Tactics section.

Before then, though, let's take a gander at this chart pattern.

Tour

Figure 65.1 shows a descending triangle that is typical in many respects. Price rises to meet a down-sloping trendline on the top of the pattern and falls back. It rebounds off a horizontal trendline along the base of the triangle. The volume pattern is unusual for a descending triangle. Normally, volume recedes as the breakout approaches, but this one appears to have a U-shaped trend—higher at the beginning and end and lower in the center. The breakout is downward and occurs on low volume.

A bearish breakout can have high or low volume, but volume is usually heavy. After the breakout, price pulls back to the triangle boundary before continuing down.

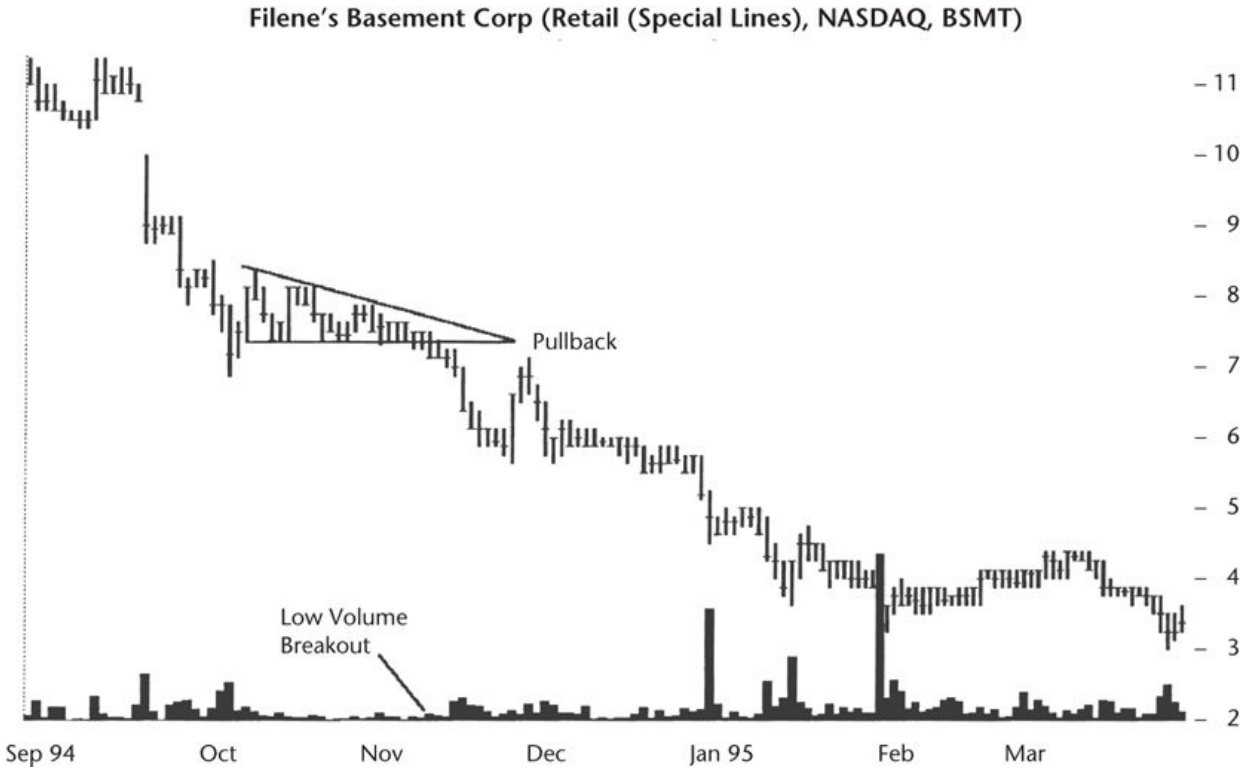


Figure 65.1 A nicely formed descending triangle with unusual volume pattern. Typically, volume trends downward and is quite low just before the breakout. Also shown is a pullback, repulsed by the horizontal resistance level.

Why do descending triangles form? The descending triangle shown in the figure begins forming in October 1994 as part of a consolidation in a downward trend. Imagine you believe the fair value of this stock is

7.38 but is overvalued above that. You tell your broker to buy the stock should it fall to 7.38. After reaching a minor high at 8.38 on 11 October, the stock begins declining for a few days. It descends and reaches the buy price 2 days later. Your broker buys the stock.

You are not alone. Other investors, believing the stock is retesting the low that occurred a week earlier, also buy the stock. Together, the buying puts a momentary floor on the stock. For the next 2 days, the stock returns to the 7.38 level before buying demand pushes the price higher. This time the stock does not climb as high as the prior minor high; it only reaches a value of 8.13 before turning down.

Again, when the stock reaches a low of 7.38, buying demand increases enough to halt the decline at that level and to send the stock moving back up. During the next 2 weeks or so, you and other investors buy the stock. Enthusiasm for the stock quickly wanes, and a series of lower highs outline a down-sloping trend. The floor, at 7.38, becomes the horizontal support level.

Eventually, investors buy enough of the stock and have either run out of money to buy more or decide they already own enough. The stock slips below the support line on 9 November and closes at the low for the day at 7.13. The stock hovers near that price for a few more days before continuing down in earnest on higher volume.

Quick-footed investors, realizing that the floor is no longer holding firm, sell the stock. The price begins declining rapidly now but soon levels off. For a few days, selling pressure meets buying demand and the decline halts, turns around, and begins moving up. It nears the base of the triangle; the smart money quickly disposes of any remaining shares in their portfolios. The pullback completes, and the stock rounds over and starts heading down again. In 3 months' time the stock reaches the ultimate low of just under 3 before leveling out. That is a decline of 60%.

Identification Guidelines

Descending triangles have distinctive patterns, making them easy to identify. Consider the triangles shown in **Figure 65.2**. A descending triangle appears during March and April 1993 and marks the end of a long rise started in late 1992. Like a ball bouncing along the floor, each bounce from the support line is lower than the previous bounce, giving the triangle a down-sloping appearance along the top.

The support region at 29.50 is flat. These two ingredients, a down-sloping trendline on the top and a horizontal support line on the bottom, are the two main characteristics of descending triangles. A receding volume pattern throughout the formation completes the picture.

Figure 65.2 The March triangle forms after a long climb beginning in late 1992. The nicely formed chart pattern has a receding volume trend, especially in the latter half of the triangle. The July triangle is a failure because it does not immediately descend as expected.

The July pattern is also a descending triangle although not as well formed. Volume rises through the first half of the pattern before moving downward toward the triangle apex.

If you owned stock in this company and sold during either of the descending triangles, you would be pleased. Although the second pattern is a failure because price rises above the triangle top (after a downward breakout), price does start down within the month. Sometimes failed patterns prematurely alert you to a trend change, as the July example shows.

Table 65.1 outlines the identification characteristics for descending triangles.

Appearance. The triangular-shaped appearance makes the descending triangle pattern easy to identify. Look for two trendlines: The bottom one is horizontal, or nearly so, and the top one slopes downward. The two trendlines should eventually join at the triangle's apex, but price usually breaks out before reaching it.

Trendlines. The price trend is bounded by two trendlines: a down-sloping one along the peaks and a horizontal (or nearly so) one along the valleys. Price must touch the trendlines at least five times, the top one at minor highs and the bottom one at minor lows. If price slices through a trendline at the start or end of the pattern, it does not count as a touch.

The March triangle, for example, has only two trendline touches along the bottom and three along the top.

Support and resistance appear along the two trendlines. Throwbacks to the top of the triangle usually stop at the sloping trendline, whereas pullbacks to the bottom halt at the horizontal trendline. After a downward breakout, price often follows the sloping trendline lower.

Table 65.1 Identification Guidelines

Characteristic	Discussion
Appearance	Price bounds a triangular-shaped pattern by two converging trendlines. The bottom one is horizontal, and the top one slopes downward so that they converge.
Trendlines	A horizontal (or nearly so) base acts to support price. A down-sloping price trend along the peaks forms overhead resistance. The trendlines converge at the apex. Price should touch the two trendlines at least five times at minor highs or lows (three touches of one trendline and two of the other).
Crossing pattern	Price should cross the triangle several times, covering the whitespace with price movement.
Breakout direction	A breakout occurs when price closes outside the trendline boundary, either upward or downward.
Volume	Volume recedes and tends to drop off just before the breakout.

Crossing pattern. Price oscillates up and down within the triangle, with each wave getting smaller. Price should cross the pattern from top to bottom plenty of times to fill the whitespace. If you have a glob of whitespace in the middle of the pattern, then you've made a mistake.

Breakout direction. Price can break out in any direction, including none at all when price just meanders out the triangle apex. The breakout direction is random, though, with a slight edge to upward breakouts 51% of the time.

Volume. Volume typically recedes over the course of triangle development. As price approaches the breakout, it usually becomes quite low, as if gathering strength before a wrestling match, and then explodes upward during the breakout.

Volume need not be high during the breakout or low preceding the breakout, but that is the typical behavior. Do not exclude a descending triangle just because volume looks unusual.

Identification Challenges

Triangles are easy to spot. However, there are some situations that dictate a careful approach. **Figure 65.3** shows an example of what looks like a descending triangle, but is not. The volume trend does not conform to the usual receding pattern. In this example, volume rises along with price at the start of the triangle and then tapers off at the top when price rounds over. However, volume climbs as price descends and then ignites the day after the breakout.

Volume for many chart pattern types is not a crucial factor, and you should not attach too much significance to it. However, a volume pattern that is not characteristic raises a warning flag. Coupled with other factors, it might cause you to bypass the stock and look elsewhere for a more promising situation.

The price picture is even worse. Well-formed descending triangles have price crossing from top to bottom several times. There is no massive amount of whitespace in the center of the triangle, but this one has it in abundance. Contrast Figure 65.3 with Figure 65.1.

Don't cut off a speedbump like that show and think it's a descending triangle. It's not.

Focus on Failures

Figure 65.4 shows an example of what traders hate. The breakout is downward but lasts just 2 days before price gets sucked back into the mothership. Then, price takes to the air and climbs. When it rises above the top of the triangle, the descending triangle chart pattern becomes a failure (it busts the downward breakout in this case).

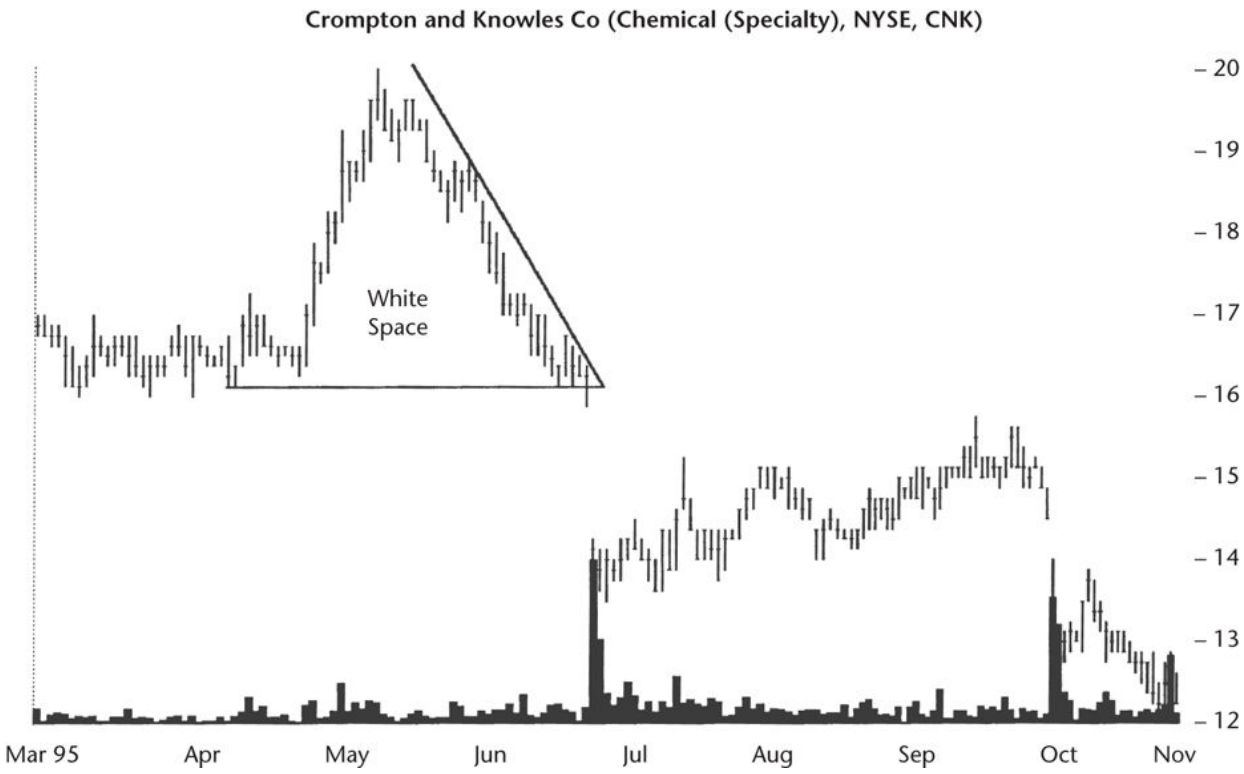


Figure 65.3 This is not a descending triangle. There is too much whitespace in the center of the pattern. Price should cross from top to bottom several times forming at least two minor highs and lows.

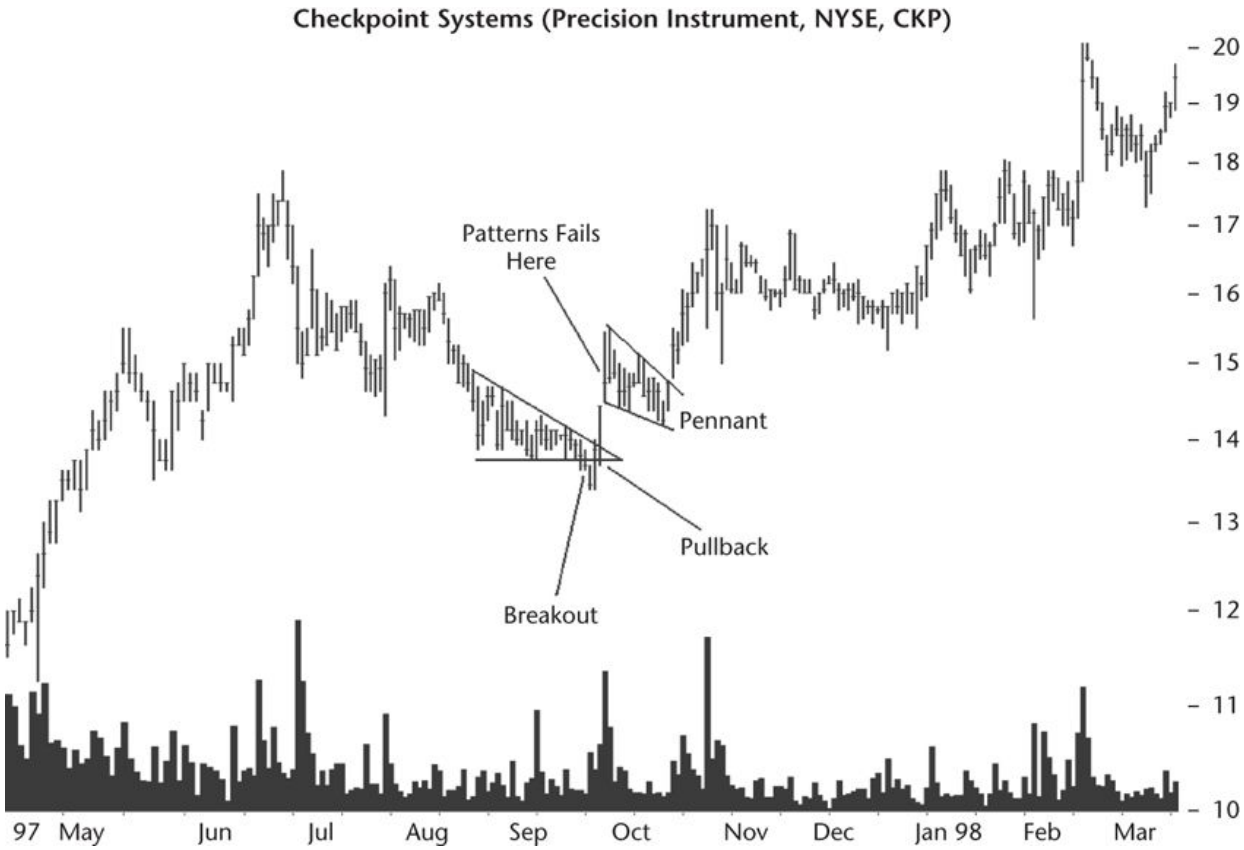


Figure 65.4 This is an example of a busted pattern. A brief downward breakout dooms this descending triangle. Underlying support and a bull market helped turn the price tide from down to up.

The climb does not end there because price forms a pennant with an upward breakout. That pennant, being a half-staff pattern, suggests a climb that equals the one leading to it. In this example, the rise after the pennant is larger than the one preceding it.

What went wrong with this triangle? The price trend leads downward into the pattern, and many traders would expect a downward breakout, but the triangle forms in the midst of a bull market.

In a rising general market (that is, the S&P 500 index is moving up), a downward breakout is always a red flag. In fact, the S&P was on a straight uphill run leading into August and then the trend reversed.

For about 2 weeks, price declined in the index and formed a bottom, then a higher bottom, and then a third higher low. The three rising valleys signaled a trend change from down to up, and the rising tide doomed the downward breakout from the triangle in the stock.

Besides the market tide robbing the triangle ship of momentum, the triangle looks almost perfect. Price touches each trendline several times, crossing the triangle and overwriting the whitespace, but volume tends to rise instead of recede.

The two minor lows near the start of the triangle do not rest on the horizontal trendline. If you were to connect those two lows with a new horizontal trendline, the breakout would have come a bit sooner, but you still would have lost money if you shorted the stock.

In the summer of 1995 and into the fall (not shown), several peaks appeared near $13. Those peaks acted as support and played a role in stopping the decline. The underlying support coupled with a rising stock market truncated the decline and turned a handsome descending triangle into an ugly loser.

Statistics

Table 65.2 shows general statistics for descending triangles.

Number found. I found 1,760 descending triangles in 831 stocks with the first appearing in July 1991 and the most recent in March 2019. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. In three of four columns, the triangle acts as a continuation of the prevailing price trend. Only in bull markets after downward breakouts does the pattern act as a reversal most often.

Reversal/continuation performance. As you scan across the columns, looking at the performance of reversals and continuations, be mindful to look at the number found. The large difference for upward breakouts in bear markets (39% rise for reversals from 72 samples versus 23% for continuations using 85 samples) might be due to the comparatively low sample counts.

Table 65.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	737	157	650	216
Reversal (R), continuation (C) occurrence	37% R, 63% C	46% R, 54% C	64% R, 34% C	47% R, 53% C
Reversal, continuation performance	38% R, 38% C	39% R, 23% C	–15% R, –17% C	–23% R, –20% C
Average rise or decline	38%	30%	–15%	–21%
Standard & Poor's 500 change	9%	2%	–2%	–8%
Days to ultimate high or low	167	91	48	30
How many change trend?	50%	38%	28%	48%

Average rise or decline. Triangles in bull markets with upward breakouts are the stars, soaring 38% after the breakout. Notice how the bear market keeps the rise down to just 30%.

Downward breakouts show bear markets taking price down further than bull markets (21% versus 15%). That makes intuitive sense.

Standard & Poor's 500 change. The table shows the influence of the general market on the average rise or decline. In bull markets, the rising market tide helped lift all boats. In bear markets, the selling pressure tended to keep upward breakouts from rising far and encouraged downward breakouts to sink even further.

Days to ultimate high or low. Upward breakouts take longer to reach the ultimate high than downward breakouts take to reach the

ultimate low. I crunched the numbers several ways. The first was to compare the *bull* market, upward versus downward breakouts. I found price drops 40% faster than it rises.

The second was to compare the *bear* market ratios for up and down breakouts. Price drops 110% faster than it rises.

The third was to compare bull and bear markets using the same breakout direction (both up or both down). The bear market sees price rise 40% faster than the bull market. Downward breakouts drop 120% faster in bear markets compared to bull markets. Isn't this cool?

What does this information mean? Be patient in bull markets for the largest gains. In bear markets, be ready to exit a trade quickly.

How many change trend? This is a measure of how many triangles see price move more than 20% after a breakout. I like to see values of 50% or higher, but only upward breakouts in bull markets qualify. Of course, the other columns suffer because of the high benchmark.

If you compare each column with the average for all other chart patterns, the numbers shown in the table either tie (bull market/down breakout) or fall short (the other three columns).

Table 65.3 shows failure rates for descending triangles. How do you make sense of the numbers? Consider the 15% maximum price rise or decline row. Two columns show that more than half of the triangles (54%, 59%) will see price move no more than 15%. That is a huge failure rate.

Notice how the failure rates skyrocket for small changes in the maximum price. For example, the right two columns show the breakeven failure rate doubling for the next row down.

If you want to short a stock showing a descending triangle, do so only in bear markets. They have the fewest failures, at least initially. Trade upward breakouts from triangles in bull markets.

With so many triangles failing so early in the trade, it must mean that a few triangles perform well. Thus, keep a close eye on your position over time. Chances are it will fail to meet your dreams.

In Trading Tactics later in this chapter, I'll discuss the measure rule. Suppose it says that a $40 stock stands a good chance of rising $10.50

in a bull market. That's a 26% move. Is that realistic? The table shows that 55% of the time, price will fail to rise more than 25% (the closest entry to 26%). Thus, you'll have a losing trade more often than a winning one, all else being equal.

Table 65.4 shows breakout-related statistics.

Table 65.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	163 or 22%	34 or 22%	151 or 23%	28 or 13%
10	92 or 35%	28 or 39%	145 or 46%	33 or 28%
15	59 or 43%	23 or 54%	85 or 59%	38 or 46%
20	56 or 50%	12 or 62%	86 or 72%	14 or 52%
25	34 or 55%	10 or 68%	58 or 81%	27 or 65%
30	41 or 60%	8 or 73%	38 or 87%	16 or 72%
35	28 or 64%	7 or 78%	26 or 91%	16 or 80%
50	99 or 78%	13 or 86%	44 or 97%	30 or 94%
75	54 or 85%	12 or 94%	15 or 100%	14 or 100%
Over 75	111 or 100%	10 or 100%	2 or 100%	0 or 100%

Table 65.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	53% up	42% up	47% down	58% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 38%, M 36%, H 39%	L 37%, M 31%, H 21%	L –18%, M –15%, H –13%	L –20%, M –25%, H –20%*
Median breakout distance to apex	61%	57%	65%	62%
Throwbacks/pullbacks occurrence	60%	64%	58%	61%
Average time to throwback/pullback peaks	5% in 6 days	6% in 5 days	–7% in 5 days	–9% in 5 days
Average time to throwback/pullback ends	12 days	12 days	13 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	31%	25%	–13%	–18%
Average rise/decline for patterns without throwbacks/pullbacks	48%	39%	–18%	–27%
Percentage price resumes trend	60%	52%	48%	47%
Performance with breakout day gap	48%	42%*	–16%	–20%
Performance without breakout day gap	36%	28%	–15%	–22%
Average gap size	$0.36	$0.51	$0.38	$0.64

[*] Fewer than 30 samples.

Breakout direction. As one might expect, price breaks out upward more often in bull markets and downward more often in bear markets.

Yearly position, performance. There is no clear consensus of where the breakout should be for the best performance, but the lowest range wins in two columns.

Apex distance. Price breaks out of the chart pattern between a median of 57% and 65% of the way to the triangle's apex.

I compared the performance of breakouts before the median distance with those after the median. The bull market, upward breakout had the most samples, so I used those. Do you know what I found? There was absolutely no performance difference. *Sigh*. (Downward breakouts in bull markets favored breakouts closer to the apex with drops averaging 16% to 14%, so it wasn't a complete waste of time.)

Throwbacks and pullbacks. The table shows how often a throwback or pullback appears. On average it'll take about a dozen days to complete the throwback or pullback.

In all columns, when a throwback or pullback appears, performance suffers. For example, triangles in bull markets that throw back (not throw up) see price rise an average of 31%. Without a throwback, the rise averages 48%.

Check for overhead resistance or underlying support before trading. If a congestion zone is nearby (maybe 5% to 10% away), then that could increase the chance of a throwback or pullback.

After a throwback or pullback completes, price trends upward more often than not. Yes, you read that right. Even pullbacks see price rise between 52% and 53% of the time. Of course, that's about random.

Gaps. In three of four columns, a breakout day gap helps performance. Because I calculated performance from the breakout price (which was the opening price the day *after* a gap), you can still participate in the better performance by buying in quickly for those stocks showing a gap.

Table 65.5 shows pattern size statistics.

Height. Most of the time, tall patterns perform better than short ones. Upward breakouts in bear markets were the lone exception, but no one likes them anyway.

To use this finding, measure the height of the triangle usually at the start of the pattern (where it's tallest) and divide by the breakout price. If the result is greater than the median shown in the table, then you have a tall pattern.

Width. Wide triangles perform better than narrow ones with one exception: up breakouts in bear markets, the same column as for height. I used the median length as the separator between wide and narrow.

Height and width combinations. When combining the characteristics of height and width the performance varies quite a bit. So check the table for your situation and give yourself a trading edge by trading patterns that show the best performance and avoid those with the worst performance.

Table 65.6 shows volume-related statistics.

Volume trend. Volume trends downward most of the time as the table shows, but does it make a performance difference you can use when trading?

Table 65.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	46%	26%	–19%	–23%
Short pattern performance	30%	34%	–12%	–20%
Median height as a percentage of breakout price	9.5%	16.8%	11.4%	17.4%
Narrow pattern performance	34%	33%	–15%	–20%
Wide pattern performance	42%	28%	–16%	–23%
Median width	42 days	49 days	45 days	44 days
Short and narrow performance	29%	39%	–13%	–20%
Short and wide performance	33%	22%	–12%	–21%
Tall and wide performance	45%	30%	–18%	–23%
Tall and narrow performance	47%	18%	–19%	–22%

Table 65.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	78% down	77% down	84% down	77% down
Rising volume trend performance	37%	39%	–13%	–22%
Falling volume trend performance	38%	28%	–16%	–21%
Heavy breakout volume performance	40%	34%	–17%	–22%
Light breakout volume performance	34%	24%	–14%	–21%

Rising/Falling volume. Answer: Yes. Bull markets prefer a falling volume trend, and bear markets prefer a rising trend. Keep in mind that bear markets had fewer samples than bull markets (because bear markets were shorter in length and didn't happen as often).

Breakout day volume. Heavy breakout volume helps performance across the board. Finally! If you trade like I do, this finding won't help you much. Why? Because I place a buy order a penny above the top trendline, so an upward breakout will trigger the order automatically. I won't know the volume level until day's end, and by then it's too late. If you trade a throwback or pullback, then yes, breakout day volume may help you avoid setups likely to underperform.

Table 65.7 shows how often price reaches a stop location, but only for downward breakouts. My computer doesn't calculate stops for upward breakouts correctly.

I checked how often price climbed during the decline to the ultimate low. The results in the table shows how far into the pattern price moved along the journey. The results help you gauge where to put the stop-loss order.

For example, if you place a stop at the top of the pattern after a downward breakout in a bull market, price will trigger the stop 2% of the time.

Once you decide on a stop location, change the potential loss into a percentage of the current price. If it's a large percentage, you might want to move the stop or abandon the trade. Of course, moving the stop closer to the current price increases the chance of it taking you out of a winning trade prematurely. So stop placement is an art.

You might consider using a volatility stop. See the Glossary for details.

Table 65.8 shows pattern performance over three decades.

Performance over time. Upward breakouts show an alarming drop-off in performance (almost half from the 1990s). Downward breakouts haven't really changed over time.

Failures over time. Failures for upward breakouts have become steadily worse. Downward breakouts don't show a consistent trend, but they are higher now than they were in the 1990s.

Table 65.9 shows busted pattern performance.

Busted patterns count. The busted count is relatively flat except for downward breakouts in bull markets, where it rises to 42%, above the 22% to 28% for the other three columns. If you think that the column represents a countertrend move (a downward breakout when the market is climbing), then you have to wonder why the bear market, upward breakout column only sees 23% of triangles bust.

Table 65.7 How Often Stops Hit

Description	Bull Market, Down Breakout	Bear Market, Down Breakout
Pattern top	2%	0%
Middle	14%	12%
Pattern bottom	67%	67%

Table 65.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	51%	–16%
2000s	37%	–14%
2010s	27%	–16%
Performance (above), Failures (below)		
1990s	14%	19%
2000s	23%	30%
2010s	28%	24%

Table 65.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	203 or 28%	36 or 23%	276 or 42%	48 or 22%
Single bust count	91 or 45%	27 or 75%	196 or 71%	35 or 73%
Double bust count	66 or 33%	5 or 14%	13 or 5%	0 or 0%
Triple+ bust count	46 or 23%	4 or 11%	67 or 24%	13 or 27%
Performance for all busted patterns	–14%	–20%	40%	26%
Single busted performance	–26%	–25%	54%	33%
Non-busted performance	–15%	–21%	38%	30%

Busted occurrence. I sorted the busted patterns into how often they busted (single, double, or more than twice). Single busts happen most often, as one would expect. The second-place finish depends on the column, though.

Busted and non-busted performance. The bottom three rows in the table are my attempt to show how well busted patterns compare to the performance of their non-busted siblings.

If you can tell that a pattern will single bust, then it'll outperform the other two rows on average. You might give busted downward breakouts in bull markets a try. If the stock single busts (71% do), the average rise is 54%.

Trading Tactics

Table 65.10 shows trading tactics.

Measure rule, targets. The measure rule provides a price target to shoot for. It won't guarantee that you'll hit it. To use it, compute the height of the triangle by subtracting the price of the lower trendline from the highest high in the triangle. Then, subtract the height from the value of the lower horizontal trendline (downward breakouts) or add it to the breakout price (upward breakout). The result is the target price.

For example, compute the height of the triangle shown in Figure 65.5 by taking the difference between the highest high and lowest low (marked by the black dots). The value is 1.44 (that is, 8.82 – 7.38). Subtract the height from the value of the horizontal trendline, or 7.38 – 1.44, giving a target of 5.94. Price reaches the target the day of the breakout.

Table 65.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Calculate the height of the triangle by subtracting the highest high from the lowest low. For downward breakouts, subtract the height from the value of the lower trendline. For upward breakouts, add the height to the price where it pierces the top trendline. Alternatively, draw a line parallel with the down-sloping trendline starting at the lower-left corner of the triangle. The value of this line *the day price breaks out of the triangle* becomes the downward breakout target price. The bottom portion of the table shows how often the measure rule works.
Wait for breakout	Since the breakout direction is unknown, always wait for the breakout to occur. After a downward breakout, sell short immediately or after price pulls back to the triangle base and starts moving down again. Another way to play the triangle is to wait for an *upward* breakout, then *buy* the stock.
Cover on support	For short-term traders, cover your short positions when price finds support.
Stop location	See Table 65.7 for guidance.
Busted trade	Trade downward breakouts in bull markets that (single) bust.
Apex Turning	When price reaches the date of the apex, expect a minor high or low to appear. It might become a major turning point for the stock.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	77%	63%	74%	72%

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching full height target	64%	45%	50%	45%
Percentage reaching 2× height	47%	25%	24%	20%
Percentage reaching 3× height	36%	15%	11%	12%

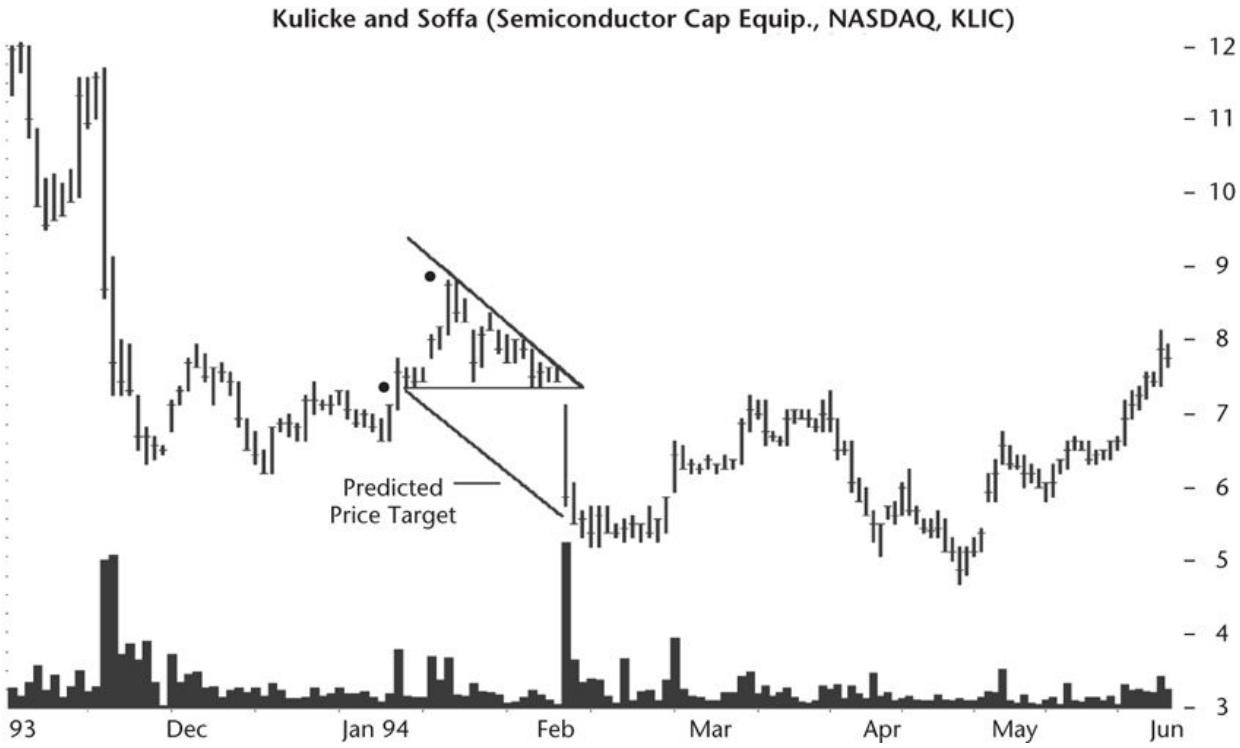


Figure 65.5 The measure rule: Take the difference between the two trendlines at the triangle's start (denoted by the black dots) and subtract the result from the value of the lower trendline, or draw a line parallel to the down-sloping trendline beginning at the lower-left corner. The value of the line on the day when price breaks out downward becomes the target price.

An alternative approach, which eliminates the cumbersome math, is to draw a line parallel to the down-sloping trendline starting at the lower-left corner of the triangle (like that shown). The value of the line on the date where price breaks out of the triangle becomes the target price.

The lower portion of the table shows how often the calculated measure rule works. For our example, we're seeing the pattern in a bull market with a downward breakout using the full height. The table says price will reach the target 50% of the time. If you were to cut the height in half and subtract it from the breakout price, then the success rate climbs to 74%.

The discussion of Table 65.3 gives an example of how you can change the distance to the target into a percentage of the current price. Then use the table to discover how often price will fail to move that far.

Wait for breakout. Waiting for a breakout to occur is paramount since the breakout direction is unknown ahead of time. If you do not wait for a downward breakout before shorting the stock, price could quickly rise away from you in an upward breakout. However, shorting a stock is not for the faint of heart and entails substantial risk. If you miss the initial breakout, you can always short after a pullback (be careful: Table 65.4 says price continues falling less than half the time).

A pullback is also a good time to add to your short position. Wait for price to resume falling before shorting. Cover your position when price approaches the target or if the picture changes (either fundamentally or technically).

Cover on support. If you have shorted the stock, then cover the short when the stock finds support. From 58% to 61% of the time, price will reverse at the bottom of a pullback (about a median decline of 5% below the breakout in bull markets), so expect a turn there in about (median) 4 days.

If you ride out the pullback or if the stock doesn't have a pullback, cover when the stock finds support. Be quick, because downward turns are often V-shaped, so you won't have much time.

If you are long the stock and are an intermediate- or long-term holder and you do not want to suffer through the average decline (see Table

65.2) after a downward breakout, consider selling as it breaks out downward (have a sell order in place a penny below the bottom trendline or sell on the close on the breakout day).

Stop location. Table 65.7 shows how often price will reach various locations in the triangle. Use that as guidance for placing a stop-loss order.

Busted trade. Downward breakouts that single bust in bull markets present an opportunity to profit from the trend reversal. Price breaks out downward, drops less than 10%, and reverses. Have a buy stop a penny or two ready at the top of the triangle. If price rises, it'll trip the stock and you'll be on your way.

Look for overhead resistance to an upward move within 10% of the chart pattern. If you find some, then the stock might double bust. You're looking to trade single busts only.

Apex Turning. Look back at Figure 65.1. Notice that the pullback peaks at the triangle's apex (within a day, anyway). Figure 65.2 shows another example where price forms a minor high or low near the day the two trendlines converge at the triangle's apex.

I measured how often this works and wrote an article about it on my website (http://thepatternsite.com/Apex.html). I concluded, “Price reaches a minor high or minor low 75% of the time within a few days of the triangle apex. Price turns from down to up or up to down 60% of the time.”

If you draw your triangle accurately enough, then you'll know where price may turn by looking at the apex.

Experience

I have used the descending triangle for both buying and selling. Let's talk about the sell side first.

Johnson & Johnson

Johnson & Johnson (JNJ) made a tall downward spike during the bear market in October 2008. I bought that day and received a fill at 55.12. Two days later, the stock had rebounded to 67.48, but I was in the trade for the long term. I missed an opportunity to cash out for a 22% gain. Realistically the gain would have been 16% if I sold at the next day's open.

- Lesson: If the market hands you a large short-term gain, consider taking it.

The stock dropped and formed what now looks like a symmetrical triangle, but I thought was a descending triangle at the time. You can see it either way, depending on how you draw the trendlines and how many times you expect price to touch the trendlines (I now require five touches).

The stock continued lower, and I sold the day price broke out downward from the triangle, receiving a fill at 54.97. So I bought at 55.12, sold at 54.97, and made money. How can that be? The stock paid a dividend, so I made enough to overcome the loss. From my notebook: “This looked to be falling through a descending triangle, so I know it's going lower.” The stock bottomed at 46.25 or 15% below where I sold.

- Lesson: Sell on adverse breakout from a descending triangle.

Southwest Airlines

Another trade is something I hate to see. Price breaks out downward from a triangle in a stock I own, I sell my position, and the stock reverses, busting the downward breakout. In the fall and winter of 1999 and early 2000, I bought Southwest Airlines three times for various reasons and held them all.

Price started climbing in February and leveled off in April where it flew sideways. That's when the airline stock made a descending triangle. Here's what I wrote in my notebook: “27 June 2000. I sold my entire holdings because the stock has pierced the support base of a descending triangle. With seasonal performance moving up in December and peaking in the spring [the stock hit a high in May at 15.17], I missed the high by about $3/share. *Ouch*. Oil prices are high, raising fuel costs, and interest rates are still high, maybe moving up more. So, it looks like the excitement is over although today the stock is up almost $1.”

The day before I sold, the stock closed below the descending triangle. So I sold the next day, and it filled at 13.04, a few pennies above the closing price and comfortably back inside the triangle.

Price left the runway and soared into 2001. I missed out on an opportunity to make an additional 79%. However, I pocketed 25%, 27%, and 30% on the three trades.

- Lesson: I sold the day after an adverse breakout, but failed to determine how far price might fall. Based on seasonality and other factors, I sold correctly. This was a long-side trade held during a bear market in a stock that happened to continue to do well.

R.G. Barry

In R.G. Barry (RGB) I bought the stock based on fundamentals and a promising technology they had developed, but when a descending triangle appeared, I sold after the downward breakout. I took a loss, but the stock continued lower 19% below my sale price.

- Lesson: If a stock does not do what you expect, consider selling, especially after an adverse breakout from a chart pattern.

Building Materials Holding Corp.

On the buy side, I bought an upward breakout in a descending triangle in Building Materials Holding Corp. (BLG) and sold after price spiked upward 20% after the announcement of quarterly earnings. The stock retraced for a week, then started moving higher. I

made 22% but missed out on the 52% rise above my sale price after I sold.

- Lesson: Many times after a good earnings announcement, price will complete an inverted dead-cat bounce (price spikes up for a day or two and then retraces for a week to 10 days but sometimes up to a month) and then climb thereafter. Nimble traders can wait for price to retrace and then buy, participating in the stock as it rises on a positive future outlook.

ExpressJet Holdings

In ExpressJet Holdings (XJT), I bought an upward breakout from a descending triangle in early 2007 and kept a tight stop. I lost 5% when the stock eased lower. I'm glad I sold because the stock dropped from my 5.78 sale price to 34 cents (and perhaps lower before I archived the data), a decline of 94%.

- Lesson: Keep losses small.

Frontier Oil Corp.

In late 2010, I traded a descending triangle in Frontier Oil Corp. (FTO) with a busted downward breakout. The stock dropped 5% after the breakout, turned around, and I bought when it recovered to near the top of the triangle, in November at 15.47. The stock moved up at a quick pace, and I was stopped out after it peaked, at 25.35 for a 64% gain in 3 months.

- Lesson: Busted downward breakouts can lead to good gains.

Sample Trade

Jacob is a novice investor. He has an MBA and works in the insurance industry, which has acclimated him to risk. Still, shorting a stock is not his first choice. The stock shown in **Figure 65.6** interested him.

A few days before the breakout, he ran through the qualifiers. The volume trend looked good: generally downward as you would expect until a few weeks before the breakout when it deviated from the normal pattern. The number of touches from side to side was good, and the minor highs and lows were distinct. He concluded that this was a valid descending triangle in the making.

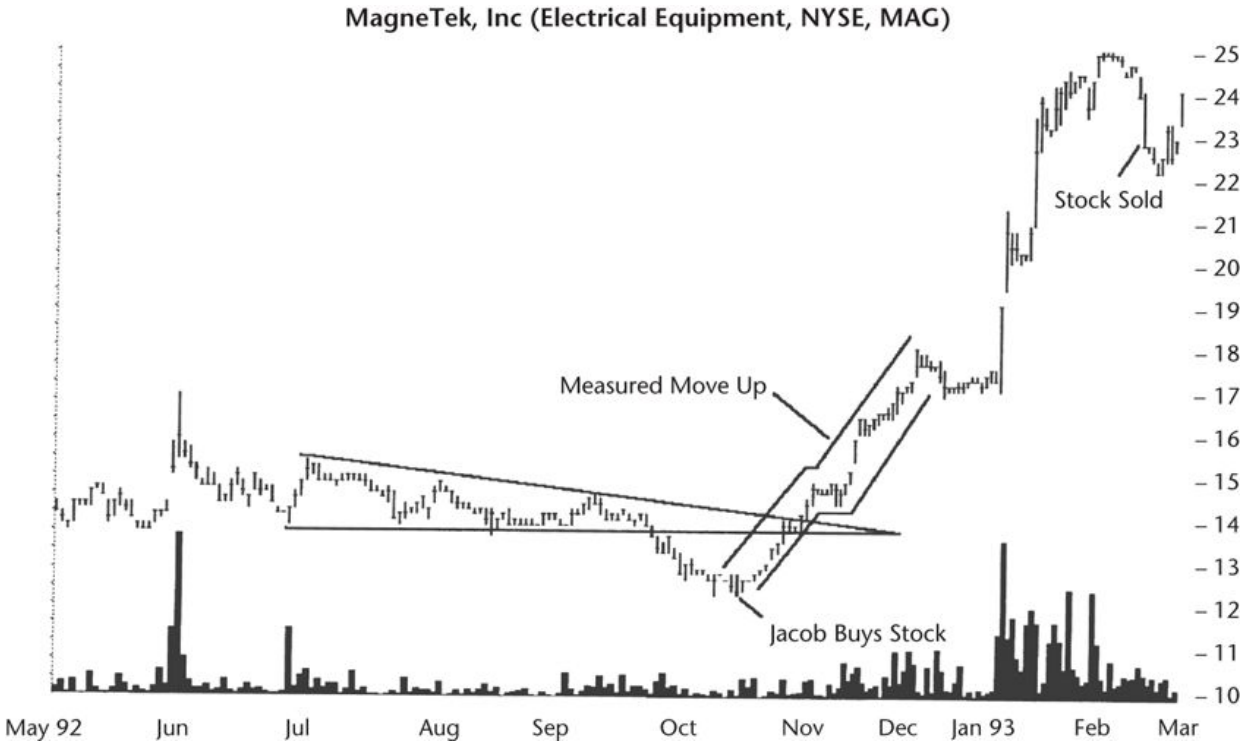


Figure 65.6 As described in the Sample Trade, instead of opening a short position, Jacob bought into the stock after the descending triangle reached the measure rule target. He raised his stop as price climbed and was eventually stopped out at 23 for a profit. A measured move up chart pattern helped him gauge the rise.

"I was nervous about shorting the stock because it could turn around and climb away from me," but a stop placed at the top of the triangle would limit his risk if things did not work out (unless it gapped higher). Still, he was uncomfortable shorting. Instead he wanted to

own the stock at a lower price. “I decided to buy the stock [instead of shorting it] after it reached the measure rule target.”

He computed the height of the triangle and discovered that if price dropped to the target, it would bottom at 12.50.

Jacob watched the stock each day. He saw it break out downward and begin declining. The first time it reached the target price and recovered a bit, he suspected the stock was near its low. At least, that is what he hoped.

On 19 October 1992, “I bought 200 shares at the close of 12.50, at exactly the target price I predicted.” He placed a stop-loss order at 11.13, slightly below the prior December's low of 11.25, a support level. Then, he looked at the possible reward and believed the stock would rise to its old high of 17.

He sat back and waited. It didn't take long for the stock to bottom out and start its climb.

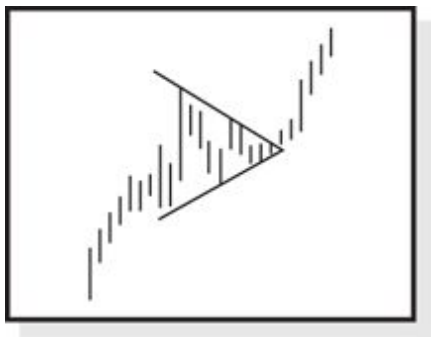
In mid-November, Jacob hoped the trend was the beginning of a measured move up. He calculated the difference from the low near where he bought the stock to the most recent high and came up with a value of 2.63. He added this to the current closing price and computed a new target price of 17.50. This number was quite close to his original price target of 17.

Over the next few days, the stock started moving up again.

By early December it had hit his new price target and the measured move was complete. Jacob decided to raise his stop-loss point to 16, the top of a support layer. If the stock sold at 16, he would have a gain of 28%, a respectable return. The results pleased him so far, but he worried that price would hit his stop as the stock consolidated.

Just after the New Year the stock started climbing again and he held on for the ride. He kept raising his stop until he was taken out at 23, to which the stock declined in mid-February 1993. After expenses, this trade made him nearly $2,000, substantially more than his initial estimate.

66
Triangles, Symmetrical



RESULTS SNAPSHOT

Appearance: Price forms lower highs and higher lows following two converging trendlines; the top one slopes downward and the bottom one slopes upward.

Upward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Intermediate-term bullish continuation	Short-term bullish reversal
Performance rank	36 out of 39	13 out of 20
Breakeven failure rate	25%	23%
Average rise	34%	26%
Volume trend	Downward	Downward
Throwbacks	62%	65%
Percentage meeting price target	58%	36%
Synonym	Coil	
See also	Diamond bottoms; diamond tops; head-and-shoulders bottoms; head-and-shoulders tops; triangles, ascending; triangles, descending	

Downward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Performance rank	34 out of 36	17 out of 19
Breakeven failure rate	37%	19%
Average drop	12%	19%
Volume trend	Downward	Downward
Pullbacks	65%	67%
Percentage meeting price target	36%	39%

The Results Snapshot shows the performance for symmetrical triangles under varying market conditions and breakout directions.

Performance is, well, awful. Performance ranks near the bottom of the list of chart patterns. Failures (not shown, but they are worse) rank near the bottom of the list, too.

Volume trends downward most of the time. Throwbacks and pullbacks appear as often in symmetrical triangles as they do in many other chart patterns (about 66% of the time). The percentage meeting the price target matches the average rise or decline, meaning it's awful, too. You can boost the success rate by cutting the pattern's height in half and using that. I'll explain that in Trading Tactics.

Is there nothing good I can write about symmetrical triangles? Yes! They are as plentiful as people not wearing masks during the Covid-19 pandemic. Not the rousing endorsement you expected, is it? Let's take a look at this pattern, and maybe we can learn what to avoid.

Tour

Figure 66.1 shows an example of a symmetrical triangle. Price rises to the start of the triangle and makes a new high. Then price crosses the pattern from top to bottom, making lower highs and higher lows. After nearly 2 months, the trends are in place. A down-sloping trendline drawn along the tops connects the minor highs, whereas an up-sloping trendline on the bottom supports the minor lows.

Volume recedes although it is spiky in places. Price attempts to leave the triangle in late June but gets sucked back in. It tries again and, with higher volume, shoots out the top of the triangle but quickly throws back, curls around, and heads lower.

Why do symmetrical triangles form? Price zooms up, making higher highs on succeeding days. Eventually, selling pressure quenches demand for the stock and price turns down. Swing traders, sensing a change in trend, quickly sell their holdings, putting additional pressure on the stock. Price falls to a level where prior support set up by a peak months earlier or various other factors entices investors to view the stock as a bargain. The price is shooting up, they reason, so why not join the trend, especially now that it is cheaper?

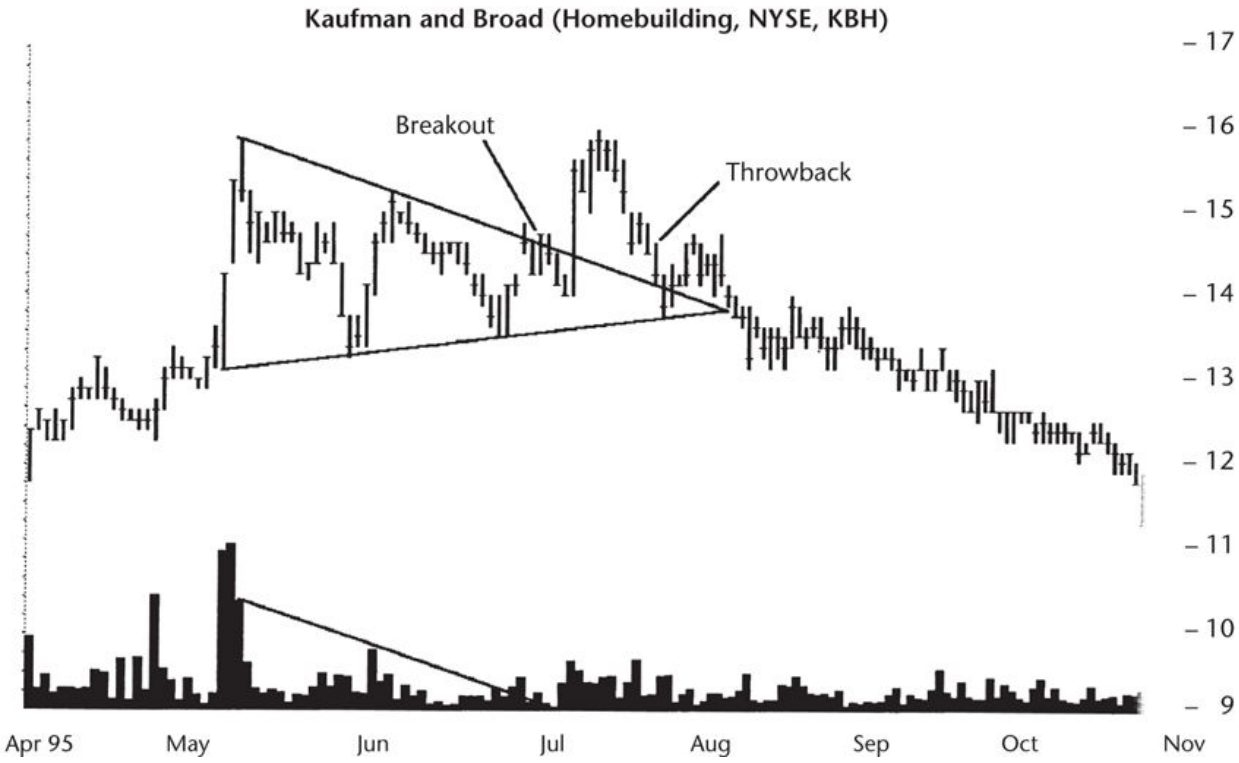


Figure 66.1 A symmetrical triangle with a small price rise.

Such rationalizations increase demand and send the stock up again, but this time the momentum players who missed a chance to sell earlier do so now. Others, believing that there may not be enough upward momentum to carry the stock to the old high, sell, too. The selling pressure halts the price rise at a lower level and turns it around.

Value investors see the stock drop, and since the fundamentals have not changed, buy it on the way down. Some add to their positions at a lower price, and others buy it for the first time. The buying may force price to move horizontally for a bit instead of straight down. Eventually, though, a higher low forms not so much from anxious buyers as from a dearth of sellers.

Throughout the trend, volume is decreasing. Fewer and fewer shares change hands, and it becomes easier for the stock to change direction. Eventually, though, a large buy order comes in and price rises. When the stock pierces the top trendline, it takes out the orders that investors have placed to buy when price rises above the trendline. This additional buying cascades and price soars on heavy volume.

If demand is strong enough, price continues rising. About half the time, though, price spins around and heads back to the triangle boundary—a throwback. There price meets support at the top trendline or at the level of the triangle apex. Usually, price rebounds and continues in its original direction. Sometimes, though, price continues down, signaling an end to the upward trend (such as that shown in the figure).

Identification Guidelines

Table 66.1 lists identification guidelines for symmetrical triangles.

Appearance. Consider Figure 66.2, a symmetrical triangle with an upward breakout. The overall shape of the chart pattern is triangular and defined by two trendlines: One slopes downward from the top and the other slopes upward from the bottom so that they join at the apex. Price crosses the pattern plenty of times.

Touches. Numbers mark the minor highs and lows, which touch or come close to each trendline for a total of at least five touches (seven in this case). You must have at least five trendline touches, three on one trendline and two on the other, but they need not alternate. Anything less than five touches risks calling a bogus pattern a symmetrical triangle.

Whitespace. Price must cross the triangle from top to bottom, covering any whitespace. Too much whitespace is a common flaw for novice pattern hunters seeking triangles.

Volume. Volume trends downward from the start of the pattern to the end. Turnover may increase when price rises and declines when price falls, but the overall trend is receding. Let me say it is unusual for a symmetrical triangle to not have a receding volume trend, but it happens.

Even when volume tapers off, it may not be noticeable unless you run linear regression and look at the slope of the resulting line. However, more than 80% of the triangles do show a receding volume trend, high enough to make you consider any deviations carefully.

Table 66.1 Identification Guidelines

Characteristic	Discussion
Appearance	A triangular shape forms within the confines of two trendlines; the bottom one slopes up and the top one slopes down so that they intersect at the triangle apex. The trendlines need not be the same length.
Touches	There should be at least five distinct touches of the two trendlines (total), three on one trendline and two on the other, at minor highs and minor lows. Price slicing through the trendline at the start or end of the pattern doesn't count as a touch.
Whitespace	Price should cross the pattern from top to bottom, covering much of the whitespace.
Volume	Usually recedes throughout the triangle but can be irregular and is often very low just before the breakout. Don't discard a pattern because it has an irregular volume trend.
Breakout direction	Unknown ahead of time. Occurs when price closes outside the trendline boundary.
Duration	Typically longer than 3 weeks at a minimum. Patterns 3 weeks or less are pennants providing they sit atop a flagpole.

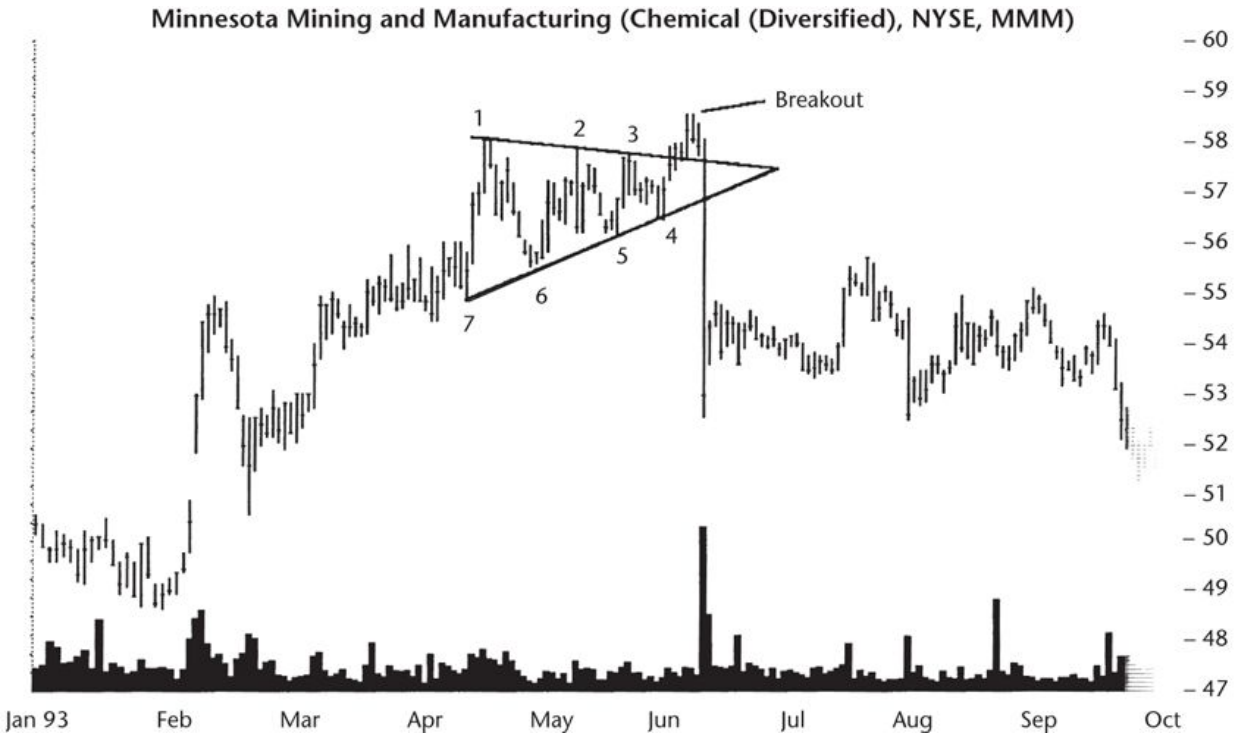


Figure 66.2 A symmetrical triangle with an upward breakout. Price closes outside the triangle but returns before the apex. In this instance, price not only returned but shot out the other side. Numbers mark the various trendline touches. A dead-cat bounce sees price tumble $5 in 1 day, then bounce up, and eventually move lower.

Breakout direction. The breakout can be in any direction, including meandering horizontally, but it often follows the prevailing price trend (upward breakout in an upward trend or downward breakout in a downward trend). However, it's near random. Don't try to guess the breakout direction. You might hurt yourself.

Duration. Symmetrical triangles can be any length, but the minimum length is 3 weeks. Anything shorter than 3 weeks and it could be a pennant. A pennant, however, is only valid if it rests on a flagpole, so if you have a 2-week pattern without a pole, then it's a symmetrical triangle.

Figure 66.3 shows two patterns. The one on the left is not a valid symmetrical triangle.

Why?

It forms beginning from the minor low at point A and rises to the minor high at point B. Then price declines following the top trendline and reaches the minor low at point C. Notice that there is only one minor high (point B) and two minor lows (A and C), but the second minor low, point C, is not included in the triangle trendline boundary. Not only are there missing minor highs and lows, but the bottom trendline is drawn incorrectly as well.

The whitespace in the center of the triangle is often a clue to an improperly identified triangle. Price should cross the triangle and fill the space, but it doesn't in this case.

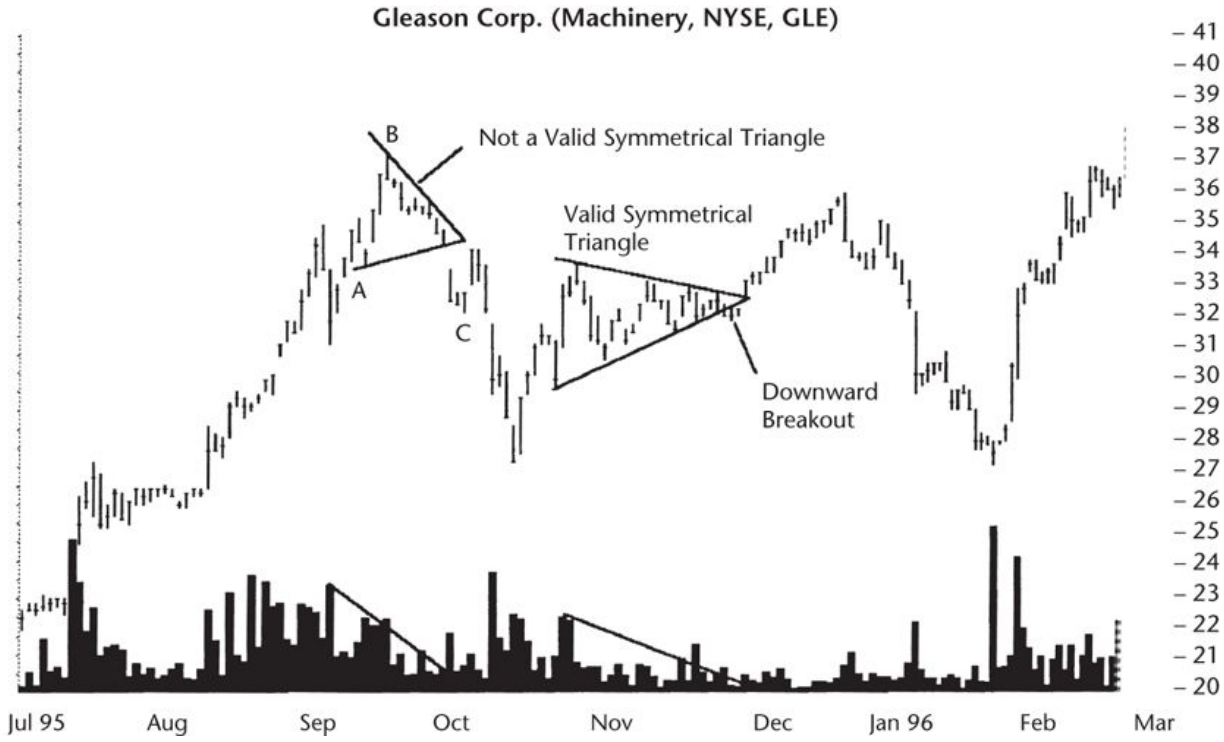


Figure 66.3 Two symmetrical triangles, one valid, the other invalid. The triangle on the right shows a downward breakout which busts. The pattern on the left is bogus.

The pattern on the right is a valid symmetrical triangle. It has plenty of minor highs and lows that touch the two trendlines. Price crosses the pattern from top to bottom enough times that it fills the whitespace. Notice the difference between the right pattern and the left one.

Just before the triangle's apex, price dips outside the trendline boundary, pulls back, and moves sharply higher.

When price moves no more than 10% away from the triangle, and then reverses to close either above the top of the pattern or below the bottom of it, it busts the breakout. The move in the new breakout direction can be quite large. Unfortunately, the symmetrical triangle is one of the few patterns where double and triple busts are quite high. I'll discuss this in Table 66.9.

The volume trend is predominantly downward in the triangle. Volume is 60,100 shares at the start of the right triangle but recedes until the day before the breakout, when only 4,600 shares trade. That's quite a decline.

Before you pronounce a chart pattern to be a symmetrical triangle, look to the left of the pattern. Is there a minor high that mirrors the one on the right? If so, then you might be looking at a (complex?) head-and-shoulders top.

A mirror image of the symmetrical triangle, one that is back-to-back with the one you have selected, probably represents a diamond top or bottom. When one of the trendlines in the triangle is horizontal (or nearly so), then the pattern is an ascending or descending triangle. All of these other chart patterns are ones that you need to search for. Many are more powerful than symmetrical triangles and give better performance.

Focus on Failures

Symmetrical triangles have two types of failures. The first is one of identification, and **Figure 66.4** shows an example.

I cannot stress how important it is to have at *least* five trendline touches. Many times a rounding bottom may tempt you to create a symmetrical triangle out of it. The price action seems to narrow over time, but there is really only one minor high. The figure shows a good example of a bad pick.

The bogus triangle begins with the minor high at point A, and price drops rapidly to the minor low at point B. Then price meanders up following the lower trendline before crossing to point C.

Price does not cross the pattern enough to qualify this as a valid symmetrical triangle, meaning there's too much whitespace. This pattern doesn't look like the one shown in Figure 66.2.

Figure 66.5 shows two more patterns. Let's discuss the left one, the February–March pattern.

The triangle has two minor highs and three minor lows, all of them touching (or coming close to) their respective trendlines. Price crosses the pattern from top to bottom enough to fill the whitespace.

The two trendlines intersect and the triangle stands alone. By that, I mean it is not part of another pattern. Or is it? The left peak (the first peak in January) in conjunction with the first minor high in the triangle might mark the beginning of a double top (or, if you include the second, lower, peak in January, it might be a triple top). Since price does not fall below the lowest low between the two peaks (in early February, at the bottom start of the triangle) before reaching a higher high (in March), the pattern does not confirm and is not a double (or triple) top.

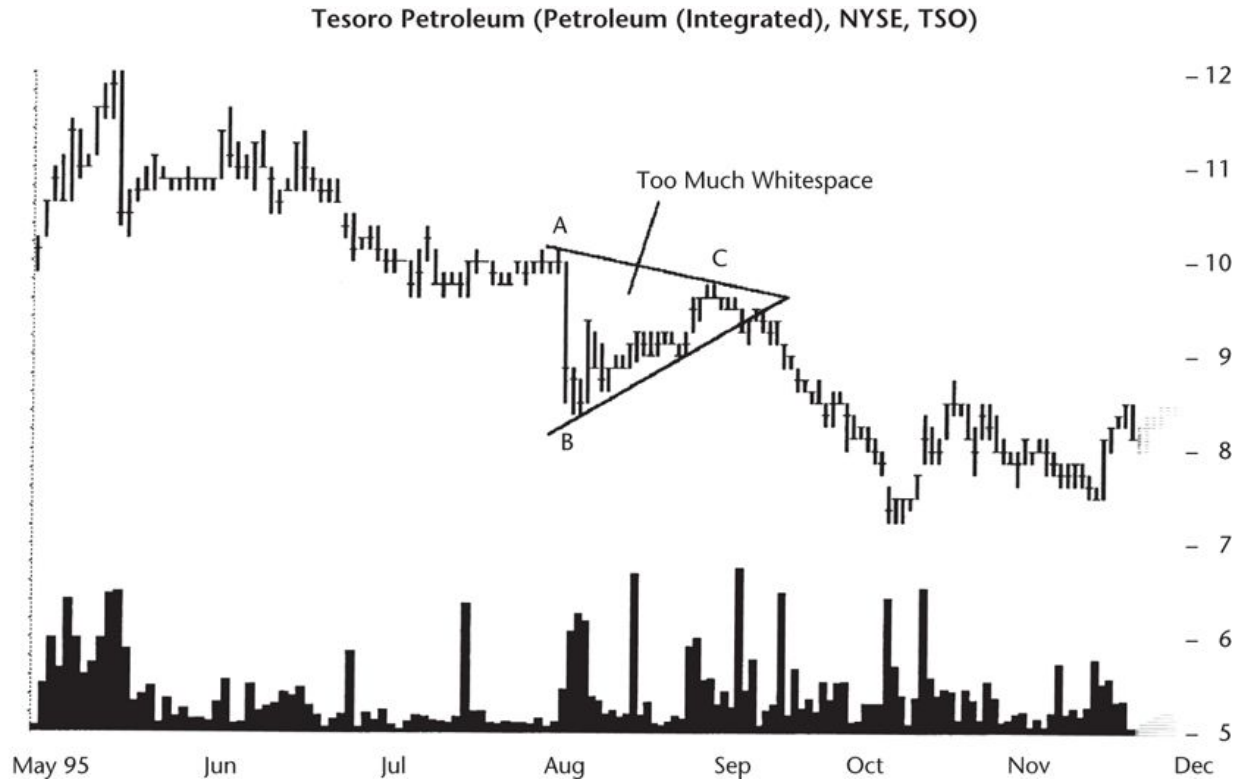


Figure 66.4 An invalid symmetrical triangle. Price does not cross the pattern enough times to fill the triangle, leaving whitespace predominating.

Figure 66.5 The symmetrical triangle on the left has an upward breakout that fails to rise by more than 5%. The triangle is a 5% failure. The triangle is part of a double or triple top. The pattern on the right does not have enough trendline touches to be valid.

However, the higher high forming as part of the throwback to the triangle apex (late March) could form a larger triple top (the early January high, triangle high, and March peak). Once price tumbles below the low formed between the three peaks, a triple top is confirmed and price heads down, pulling back briefly (twice) to just above the formation low before continuing down.

The February/March triangle *is* a valid symmetrical triangle, even though a triple top develops around it.

The triple top (overhead resistance, really) explains why this triangle fails. The triangle breaking out upward instead of downward in this situation is suspicious because of the overhead resistance set up by the prior peaks.

This symmetrical triangle is what I call a 5% failure. Price moves no more than 5% away from the breakout price before trending in a new direction (downward in this case). When price closes below the bottom of the triangle, it busts the upward breakout, too.

Look at the right pattern. Is it a valid symmetrical triangle? Price crosses the pattern from top to bottom a few times. Volume recedes as one would expect. However, there are only four trendline touches, not five. When price pierces the lower trendline, it's not a minor low touch that's inside the trendline (we'd have to redraw the trendline to include the minor low, and that would invalidate the triangle, too). The April pattern is not a valid symmetrical triangle.

Statistics

This just in: **Table 66.2** shows general statistics for symmetrical triangles. It's true!

Number found. I located 4,085 triangles in 1,011 stocks with the first in May 1988 and the most recent in April 2019. Not all stocks covered the entire period, and some no longer trade. Most of the patterns appear in bull markets, but that's only because they are longer (and more of them) than bear markets.

Reversal (R), continuation (C) occurrence. The trend columns (bull market/up breakout, bear market/down breakout) have the most triangles acting as continuation patterns (like swimming with the current). The countertrend columns, the two inner ones, show more reversals than continuations as price struggles trying to swim against a current.

Reversal/continuation performance. Reversals perform slightly better than continuations for upward breakouts. Downward breakouts don't show a significant performance difference.

Average rise or decline. The average rise is a disappointing 34% in bull markets. This figure is well off the pace set by other chart pattern types (average: 42.4%). The other columns also show below-average performance when compared to other patterns.

Table 66.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	1,950	394	1,300	441
Reversal (R), continuation (C) occurrence	40% R, 60% C	55% R, 45% C	59% R, 41% C	46% R, 54% C
Reversal, continuation performance	36% R, 33% C	27% R, 25% C	–12% R, –13% C	–19% R, –19% C
Average rise or decline	34%	26%	–12%	–19%
Standard & Poor's 500 change	10%	1%	–2%	–10%
Days to ultimate high or low	176	69	42	33
How many change trend?	45%	35%	22%	39%

Standard & Poor's 500 change. Notice how the general market, as measured by the S&P 500 index, helped or hindered the performance of the average symmetrical triangle. Consider that the best rise is 34% in bull markets for triangles with upward breakouts. That figure corresponds to a 10% rise in the index. A falling general market (–10%) helped triangles with downward breakouts in bear markets. They dropped 19% on average.

What does all this mean? Trade with the market and industry trends for best results. If both are trending in the same direction as your stock, you stand a better chance of making money.

Days to ultimate high or low. Triangles in bull markets take longer to reach the ultimate high than bear markets take to reach the ultimate low.

I compared the price velocity of bull markets with bear markets and found price climbed twice as fast in bear markets as in bull ones. Downward breakouts show the same velocity: Bear markets see price fall twice as fast as in bull markets.

How many change trend? This is a count of how many patterns see price move more than 20% after the breakout. I like to see values above 50%, but the triangle falls well short of that in every column. Other chart patterns show better trending ability.

I think what's happening is that the symmetrical triangle is happy seeing price bounce up and down like a fishing bobber. Even after the breakout, price doesn't trend as well as other chart patterns as it continues to bob up and down.

Table 66.3 shows failure rates for symmetrical triangles. For small declines, triangles with downward breakouts in bear markets have the lowest failure rates. After a maximum price rise of 10%, triangles with upward breakouts in bull markets show a smaller failure rate.

Table 66.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	495 or 25%	92 or 23%	480 or 37%	85 or 19%
10	274 or 39%	78 or 43%	269 or 58%	76 or 37%
15	180 or 49%	44 or 54%	141 or 68%	60 or 50%
20	118 or 55%	42 or 65%	130 or 78%	47 or 61%
25	114 or 61%	27 or 72%	96 or 86%	50 or 72%
30	96 or 65%	23 or 78%	55 or 90%	29 or 79%
35	85 or 70%	17 or 82%	50 or 94%	17 or 83%
50	142 or 77%	37 or 91%	61 or 99%	56 or 95%
75	192 or 87%	16 or 95%	17 or 100%	21 or 100%
Over 75	254 or 100%	18 or 100%	1 or 100%	0 or 100%

How do you read the table? I know your eyes probably glaze over when you see a table swimming with numbers, but consider the bull market, up breakout column. A quarter of the patterns fail to climb more than 15%.

Downward breakouts in bull markets have the highest failure rates: 58% fail to see price drop more than 10%.

Say you want to shoot for the moon and make 50%. How many triangles perform that well after an upward breakout in a bull market? Answer: 23%. That is, 77% will fail to see price rise more than 50%.

Table 66.4 shows breakout-related statistics.

Breakout direction. The trend followers have the most breakouts. That's bull market/upward breakouts and bear market/down breakouts.

Yearly position, performance. Where do the best performing triangles appear? Las Vegas? Atlantic City? No. Apparently the answer is all over because the table shows only a mild preference for those within a third of the yearly low in the two right columns.

You will want to avoid those patterns with breakouts within a third of the yearly high. Even so, in many cases the performance difference between the values isn't wide.

Apex distance. The median distance from the start of the triangle to the breakout is in the low-to-mid-70s.

Throwbacks and pullbacks. Throwbacks and pullbacks occur about two-thirds of the time. Price trends for 5 or 6 days before making the return trip back to the breakout price for a round-trip of 10 to 12 days.

When triangles have throwbacks or pullbacks, performance suffers. That's true in all columns. For example, triangles in bull markets that throw back show rises averaging 30%. Without a throwback, the rise averages 41%.

To avoid a throwback or pullback, look for nearby (within 10% away) overhead resistance or underlying support before trading the triangle.

Gaps. In three of four columns, the appearance of a breakout day gap helps performance, not by a lot, but some. I calculate performance using the opening price the day *after* a gap, so you don't have to own the stock to participate in better performance for patterns showing a gap.

Table 66.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones under all market conditions and breakout directions except for the right column (bear market/down breakout, where it's a tie).

However, for the best performance, select a tall pattern, as measured from the highest minor high to the lowest minor low in the triangle. Divide the height by the breakout price and compare it to the median in the table. If your result is above the median, then you have a tall pattern.

Width. Wide patterns also perform better, except for triangles in bear markets with downward breakouts (again, that column shows a tie). I used the median length shown in the table as the separator between wide and narrow. I'm impressed that the median width across the four columns is about the same: 35 to 37 days.

Table 66.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	60% up	47% up	40% down	53% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 34%, M 35%, H 34%	L 29%, M 29%, H 20%	L –14%, M –13%, H –10%	L –20%, M –18%, H –18%
Median breakout distance to apex	74%	75%	74%	72%
Throwbacks/pullbacks occurrence	62%	65%	65%	67%
Average time to throwback/pullback peaks	4% in 6 days	7% in 5 days	–4% in 5 days	–7% in 5 days
Average time to throwback/pullback ends	12 days	11 days	12 days	10 days
Average rise/decline for patterns with throwbacks/pullbacks	30%	23%	–11%	–17%
Average rise/decline for patterns without throwbacks/pullbacks	41%	32%	–15%	–23%
Percentage price resumes trend	61%	48%	44%	49%
Performance with breakout day gap	35%	23%	–14%	–21%
Performance without breakout day gap	34%	27%	–12%	–19%
Average gap size	$0.38	$0.24	$0.40	$0.50

Height and width combinations. You would think that three of the columns that have tall patterns outperforming and wide patterns outperforming would show the best performance for patterns both tall and wide. That's not the case, though. Each column has its own preference.

Table 66.6 shows volume-related statistics.

Volume trend. Nearly all of the time volume trends downward from the pattern start to the end, as verified using linear regression.

Rising/Falling volume. In three of four columns (the right column, again, is the exception), a falling volume trend sees the best performance.

Breakout day volume. Heavy breakout volume helps performance (except in bear markets with downward breakouts). I wonder why the right column is the renegade?

Table 66.7 shows how often price reaches a stop location, but because my computer doesn't calculate the stops for symmetricals properly, I removed the table.

Table 66.8 shows the performance over three decades but does not include bear markets (which only happened in the 2000s).

Performance over time. Performance of symmetrical triangles has decreased over the decades, from 41% during the 1990s to 29% in the 2010s (upward breakouts).

Downward breakouts also show performance has suffered, but not dramatically so (probably because the numbers are close to zero anyway. How low can they go?).

Table 66.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	42%	32%	–15%	–19%
Short pattern performance	27%	21%	–10%	–19%
Median height as a percentage of breakout price	10.1%	18.3%	11.4%	19.0%
Narrow pattern performance	31%	19%	–12%	–19%
Wide pattern performance	38%	33%	–13%	–19%
Median width	35 days	37 days	35 days	36 days
Short and narrow performance	27%	14%	–10%	–20%
Short and wide performance	26%	34%	–9%	–19%
Tall and wide performance	43%	33%	–14%	–20%
Tall and narrow performance	39%	29%	–16%	–17%

Table 66.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	84% down	82% down	86% down	84% down
Rising volume trend performance	33%	24%	–11%	–21%
Falling volume trend performance	35%	26%	–12%	–19%
Heavy breakout volume performance	36%	27%	–13%	–19%
Light breakout volume performance	32%	25%	–12%	–20%

Table 66.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	41%	–14%
2000s	38%	–12%
2010s	29%	–12%
Performance (above), Failures (below)		
1990s	18%	24%
2000s	17%	38%
2010s	34%	41%

Failures over time. Failures were steady until the 2010s when they doubled (upward breakouts). Downward breakouts have seen failures increase over the last three decades. By failures, I'm counting how many patterns failed to see price rise or fall by more than 5%.

Table 66.9 shows busted pattern performance. I did a study (not using the most recent data) and found that symmetrical triangles bust more often than any of the other patterns studied (about a dozen variations of popular patterns).

Busted patterns count. The table shows how many triangles bust. Recall that a bust happens when price moves no more than 10% in the breakout direction before veering off and trending in the opposite direction. Price then has to close beyond the triangle. (For downward breakouts, that means it has to close above the top of the triangle. For upward breakouts, that means a close below the bottom of the triangle.)

Table 66.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	624 or 32%	95 or 24%	624 or 48%	95 or 22%
Single bust count	285 or 46%	65 or 68%	416 or 67%	54 or 57%
Double bust count	204 or 33%	17 or 18%	36 or 6%	7 or 7%
Triple+ bust count	135 or 22%	13 or 14%	172 or 28%	34 or 36%
Performance for all busted patterns	–13%	–18%	37%	18%
Single busted performance	–23%	–24%	52%	28%
Non-busted performance	–12%	–19%	34%	26%

Busted occurrence. I don't like to see 46% of patterns that bust are single busted (bull market, up breakout). The number should be

much higher, like the 67% we see for Eve & Eve double tops. Why my preference? Because single busted patterns usually outperform their non-busted counterparts, but there's no sure way to determine if a pattern will single, double, or triple+ (more than two) bust. Thus, having a high single bust rate makes trading a busted pattern more reliable (you hope it busts just once). The higher the single bust rate the better.

Anyway, single busted patterns happen most often, as the table shows. Triple+ busts place second for frequency for downward breakouts.

Busted and non-busted performance. The last three rows in the table are my attempt to compare busted and non-busted performance. Can you make more money trading a busted pattern?

The answer is yes, providing the pattern single busts. I would stick to trading busted downward breakouts in bull markets. Sixty-seven percent of busts will be single ones, and price rises an average of 52% above the top of the triangle (to the ultimate high). That percentage is quite an incentive. Even if you only make half that it's a tasty hors d'oeuvre.

Trading Tactics

Table 66.10 shows trading tactics.

Measure rule, targets. There are two types of measure rules for symmetrical triangles. Figure 66.6 shows the first one. Compute the triangle's height from highest high (point B at 9.75) to lowest low (point A at 8.38). Either add or subtract the difference, 1.37, from the breakout price depending on the breakout direction. In this case, the breakout is upward, so the target price becomes 10.50 (that is, 9.13 + 1.37). Price reaches the target in less than a month.

Table 66.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the triangle's height by subtracting the lowest low from the highest high. For upward breakouts, add the difference to the breakout price or for downward breakouts, subtract the difference. Alternatively, symmetrical triangles can be halfway points in a move, so project accordingly. The bottom portion of the table shows how often price reaches the measure rule target.
Wait for breakout	Always wait for the breakout in case the triangle reverses.
Busted patterns	If a triangle breaks out downward, drops no more than 10% before reversing, and closes above the top of the triangle, then buy.
Apex turning	When price reaches the date of the apex, expect a minor high or low to appear. It might become a major turning point for the stock.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching half height target	74%	59%	58%	60%
Percentage reaching full height target	58%	36%	36%	39%
Percentage reaching 2× height	41%	18%	16%	18%
Percentage reaching 3× height	30%	10%	8%	11%

The bottom portion of the table shows how often this method works. I used the full height of the pattern in the example during a bull market. The table says there's a 58% chance that the stock will reach the target before reversing and forming a new trend. If you cut the height in half and add it to the breakout price, the stock will reach the closer target 74% of the time.

For downward breakouts, if the target is below zero, then ignore it. The stock won't go below zero, at least not in this universe. And if it does, we probably won't be around to see it.

For both breakout directions, if the target is too far away (divide the height by the current price and express it as a percentage), then ignore it. Use Table 66.3 to help you decide how likely it will be for the stock to reach a target.

In our example, the height is 1.37 and the breakout price is 9.13 for a potential gain of 1.37/9.13 or 15%. Table 66.3 says that after an upward breakout in bull markets, nearly half (49%) of patterns will fail to see price rise more than 15%.

Some symmetrical triangles act like larger versions of pennants. They are half-staff patterns and mark the halfway point in a move (like a measured move up or down chart pattern). Had the triangle broken out downward, it might have continued down and fulfilled the measure rule.

In such a case, the measure from point C (on the left at 11.88 is the start of the move leading to the triangle) to point A (the bottom of the triangle) should be subtracted from the value of point B (the triangle's high). The result is the target price of 6.25.

Use one or both measure rules as appropriate to the situation. The first method, using the formation height, is the more conservative of the two and more likely to be fulfilled.

Wait for breakout. Always wait for a breakout. Occasionally, price squeezes out the triangle apex and has no breakout at all (until it moves far enough to show a trend). This is a rarity, but it does happen. Once price shows a trend preference, trade with the trend: Go long if price breaks out upward and short after downward breakouts (or skip the trade and look elsewhere).

Busted patterns. I have noticed that even when price breaks out in an adverse direction (a reversal of the prevailing trend), it quickly reverses again and resumes the original trend. This means, for example, in an upward trend price breaks out downward and falls by 10% or less, then heads back up and finishes much higher. Figures 66.2 and 66.3 show examples. This behavior for reversals is something to watch out for, especially for downward breakouts in a raging bull market. Trading these busted patterns can be profitable.

Apex turning. Look at Figure 66.6. See how price turns a day or two in front of the triangle's apex? Figure 66.1 shows another example where a minor high appears the day before the two trendlines merge. In other words, look for price to make a minor high or low near the date of the triangle's apex.

I measured how often this works and wrote an article about it on my website (http://thepatternsite.com/Apex.html). I concluded, “Price reaches a minor high or minor low 75% of the time within a few days of the triangle apex. Price turns from down to up or up to down 60% of the time.”

If you draw your triangle accurately enough, then you'll know where price may turn by looking at the apex.

Experience

I have traded symmetrical triangles more than 60 times over the years. For a few lessons, let's look at sales using symmetrical triangles because that's where you get the most value from analyzing trades.

TD Ameritrade Inc.

The first one comes from TD Ameritrade Inc. (AMTD) in 2004. Here's what I wrote in my notebook: “21 January 2004. I bought at market, filled at 17.11. Earnings were announced yesterday, and the stock popped up. I expect an earnings flag [an event pattern] and decide to buy in at a good price before that happens. The company expects a strong fiscal 2004 and so do I. I've been trading more than ever. I thought of doubling my usual position, but consider my enthusiasm is getting carried away. Still, I view this as an easy way to make money—a lock, if you will. Downside is a partial retrace to 15, say 16. If it closes below 15, then sell. Upside is unknown. It might hesitate at 22, the site of a prior peak in late 2000. That's my goal.”

Less than a week later, I made another notebook entry: “27 January 2004. I bought at market, filled at 16.82. I believe this is an easy profit winner because of the market excitement. People are buying stock, and this broker will make money hand-over-fist, so I doubled my position. Upside is the old high at about 22. The stock will cup-with-handle there. Expect a pullback in the handle, then a resumption of the uptrend if price climbs above the right cup lip.”

Both of these trades were near the yearly high, before the symmetrical triangle appeared.

Two months later, the party was over. Here's my notebook: “11 February 2004. I sold my holdings at market, filled at 14.73 to 14.75. This has broken down out of a symmetrical triangle and looks to be headed lower. This is one of those ‘can't lose’ trades that I firmly believed would be a winner because of the strong fundamentals.

“Often, I have found that they turn into a disaster. The good news is that I got out. I waited for price to climb off the daily low of 14.33. It recovered to 14.88 but dropped to 14.73 before I could get out.”

I've noticed in my trading that the more confident I am of making a profit, the worse I'll get hammered. When the trade begins to go bad, I'll be in denial, that I *know* the stock will recover. And each day, price drops. Soon, you've lost so much money that you stop following the stock because you don't want to wade through all of the blood.

More recently, I don't let my trading bother me at all. Losses are the cost of doing business. If I stick to my trading plan, then I'm happy, until I get whipped out of a position that sees the stock double in price. Yes, that bothers me. Or worse, the stock doubles but you hope for more, and then it drops in half, not overnight, but as a slow drip, drip, drip that you don't notice until your downstairs furniture is floating.

In this trade, things didn't get nearly that bad. I sold after the downward breakout from the triangle, so I limited the losses. On the two trades, I lost 13% and 14%, which is significantly higher than the 8% or less I like to see. I followed my trading plan and got out promptly. The stock continued lower to 9.35 or 37% below my sale price. Thanks goodness I sold.

- Lesson: Never fall in love with a stock and never get overconfident that a trade will work. If you hear yourself saying things like “Everything I touch turns to gold,” “I can't lose,” or “This is an easy game,” then you're about to take a major loss.

Northwest Pipe Co.

In Northwest Pipe Co. (NWPX), I bought the upward breakout from a confirmed head-and-shoulders bottom in December 2005. From my notebook: “Buy reason: head-and-shoulders bottom with throwback complete. Buy again plans: None. I don't trust this chart pattern, and the stock is thinly traded.”

This trade started out the opposite way compared to the Ameritrade trade: skepticism.

About a month later, the stock formed a symmetrical triangle. “Sell reason: This has gapped downward outside of a small symmetrical triangle and the CCI [commodity channel index] says sell. MACD [moving average convergence/divergence] shows declining

momentum. This really didn't work as expected, so it's time to leave. If I'm lucky, I'll make a few bucks, but it'll be close to 0."

I made 1%, but that's not why I'm describing the trade. The stock rubbed my nose in it and decided to climb. The ultimate high wasn't far off, 30.88, which the stock reached 2 months later. That's a gain of 15% above my sale price.

What irks me about the trade is this was a 5% failure. Meaning the stock broke out downward. I sold, and the *very next day* the stock started climbing. It meandered up and down before reaching the ultimate high, but I hate being kicked out of the stock days to weeks before it resumes climbing.

- Lesson: Before selling, determine how far price might fall. It's always best to follow your trading plan, but be flexible. In this case, I'd probably trade it the same way.

Questar Corp.

Questar Corp. (STR) did the same thing. I bought in the middle of a symmetrical triangle and hoped for an upward breakout. Instead, the stock broke out downward and I sold, taking a 2% loss, only to see the stock reverse and climb. I sold at 20.10, and the stock peaked at 44.80, more than double my sale price.

I picked the right stock. It made a huge gain as I predicted it would, but it shook me out near the start, so I couldn't participate.

- Lesson: Wait for the breakout before trading.
- Lesson: If the stock busts, it could lead to large gains.

In 2008, I traded Questar again. This time, I waited for the upward breakout. What happened? The upward breakout busted when the stock dropped. I sold and took a 3% loss. The stock continued lower by 17% and reversed, climbing 46% before the 2007–2009 bear market took it for a swim 72% lower.

Delphi Financial Group Inc.

I bought into Delphi Financial Group Inc. (DFG) after the 2007–2009 bear market ended and received a fill at 22.53. “Buy reason: Bottom of congestion/rectangle region with good quarterly report. It's at the bottom of a rectangle or channel.”

The stock moved sideways two months, then dipped in January 2010 to 19.04 but recovered. From there, the stock made a straight-line run-up to peak at 28.80 in late April. Then the stock started easing lower, which is probably an understatement. The up-and-down swings were tall. I'm talking sequoia tall.

In June, it formed a symmetrical triangle. When it broke out downward, did I sell? No. Apparently I missed it or ignored it.

So I waited for the pullback and sold the day before it peaked during the pullback. I made 9% on the trade. The stock continued its violent swing and bottomed 11% below my sale price before making an extended recovery, rising 43% with me waving from the sidelines.

- Lesson: If you miss seeing an adverse breakout, wait for a throwback or pullback to occur and trade it for a better price on the exit.

Sample Trade

Can you make money on symmetrical triangles? Yes. Consider the trade I made in the stock shown in **Figure 66.6**. There were a number of factors that led me to this stock, including a rising rig count, rising oil price, cold weather, and related political events (OPEC tightening and possible oil boycott against Nigeria). All of these factors suggested the price of oil during the winter would continue rising and demand for the oil field services industry would remain strong.

Figure 66.6 Measure rule for symmetrical triangles. Use the measure rule to predict the target price. Subtract the low (point A) from the high (point B) and add the difference to the breakout price (point D).

Another factor was that the stock price was riding along the bottom of a trend channel. The method used to create the trend channel is somewhat complicated, but it involves drawing a line using linear regression on the closing price and then plotting two lines parallel to the regression line, each two standard deviations away.

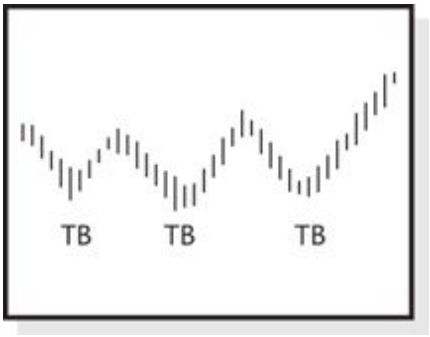
The figure shows the upper line of the channel. I did not draw the lower line, but it intersects point A and is parallel to the top channel line. The trend channel suggests price would move from one side of the channel to the other.

Since the upward breakout was on weak volume, I decided to hold off and wait for a throwback. This was a risky maneuver, but it worked. On December 1, I bought the stock and received a fill at 9.13.

The apex of a symmetrical triangle is often a place of support or resistance. You can see this on the chart. Price declined to the apex and stayed there for 3 days. As predicted, the stock took off and climbed after that. Even though the stock fulfilled the measure rule, I suspected that it would continue crossing to the upper channel line. The stock stalled out midway across the channel, pausing at the linear regression line (not shown, but it is equidistant between the top channel line and point A). This pause is often the case, and I was anticipating it.

In about a week, price started moving up again and quickly made a new high. When price touched the top of the trend channel, I considered selling but did not for tax reasons. I decided to hold off until the New Year—just 2 trading days away. On January 2 I sold the stock and received a fill at 11.63. The delay in selling dropped my return from nearly 40% to 27%. Still, that is not a bad return for a hold time of 1 month!

67
Triple Bottoms



RESULTS SNAPSHOT

Appearance: After a downward price trend, three distinct minor lows appear at about the same price. Price confirms the pattern when it closes above the highest peak in the pattern.

Upward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Long-term bullish reversal	Short-term bullish reversal
Performance rank	12 out of 39	11 out of 20
Breakeven failure rate	13%	13%
Average rise	46%	27%
Volume trend	Downward	Downward
Throwbacks	65%	67%
Percentage meeting price target	74%	55%
See also	Broadening bottoms; broadening formations, right-angled and descending; broadening wedges, descending; head-and-shoulders bottoms; head-and-shoulders bottoms, complex; triangles, descending; three rising valleys	

Triple bottoms act as reversals of the downward price trend by definition. They appear after a downtrend as three valleys that bottom near the same price. Price climbs after the pattern ends.

How well does the pattern work? The performance rank shows it's closer to 1 (best) than the end of the list (for upward breakouts, anyway). Failure rates, based on how often the pattern fails to see price rise more than 5% after the breakout, rank 16 and 10, for bull and bear markets, respectively. That's about mid-list.

Volume trends downward most often. Throwbacks occur about two-thirds of the time, which is what we see in most other types of chart patterns. Finally, price reaches the measure rule target between half (55%) and three quarters (74%) of the time on average.

What does all of this mean? I've traded this pattern over a dozen times and have struggled to make money doing so. The problems center around having my stop taking me out of stocks that go on to

make a lot of money. Other trades suffer from 5% failures or trading mistakes. I'll discuss more of this in the Experience section.

Let's take a tour of this pattern to see what separates a triple bottom from other chart patterns, like a head-and-shoulders bottom.

Tour

Figure 67.1 shows an example of a triple bottom. Price drops from a peak at D down to the triple bottom that appears at ABC. The three valleys are near the same price with the B valley at or slightly above the other two. In other words, it's not poking downward below the adjacent valleys. If the middle valley was lower than the surrounding ones, then it could be a head-and-shoulders bottom.

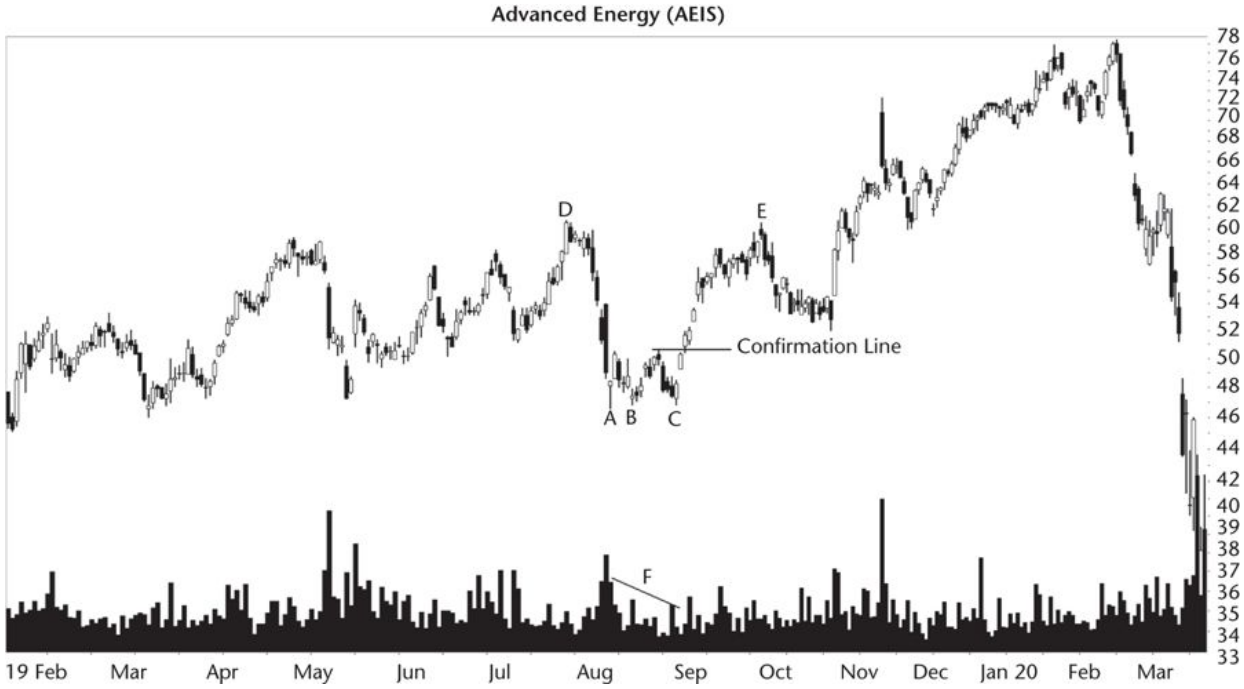


Figure 67.1 This triple bottom forms the reversal portion of a Big W chart pattern.

Volume (F) slopes downward as it does most of the time in triple bottoms, but don't throw away a triple bottom just because volume trends upward.

The pattern confirms as valid when price closes above the top of the pattern. That happens at the confirmation line (shown). Remember, price has to *close* above the line. A close helps prevent premature breakouts, where price pokes its head above the confirmation line but drops back down soon after (perhaps the next day).

In this case, the stock climbs back to the launch price. The launch price is D (where the downtrend to the pattern begins) and price recovers to E. A return to the launch price is not always the case, so

don't depend on it happening, but the launch price can make for a good target.

This triple bottom looks like the bottom of a Big W chart pattern. The left side of the W is at D, the right side is at E, with a reversal pattern between the tall sides. The drop from D to A is a long one, which is required by the Big W. Usually we see double bottoms as the reversal pattern, but in this case, the triple bottom appears.

Let's look at identification guidelines so we can help separate triple bottoms from other types of chart patterns.

Identification Guidelines

Table 67.1 lists guidelines for identifying triple bottoms, and **Figure 67.2** shows an example.

Appearance. I think most technical analysts will tell you that not just any three bottoms will do for a triple bottom. The three bottoms are usually large and well separated with generally rounded rises in between (but allow exceptions like that shown in Figure 67.1). The lowest price in each bottom is at about the same level. If the center price is lower than the other two, then you might be looking at a head-and-shoulders bottom. When the bottoms are successively lower in price, it might be one of the broadening series of patterns. If price at each bottom rises successively, then it could be a three rising valleys chart pattern.

In the figure, notice the three bottoms. Each bottom is distinct and separated with the rally between them quite pronounced. Price rises far enough to close above the top of the pattern, confirming it as a valid triple bottom.

Price trend. If price rises into the start of a triple bottom, is it still a bottom? Answer: I'm not sure. Perhaps in the next edition I'll separate triple bottoms into reversals and continuations, where price either drops into the pattern as in the traditional triple bottom or rises into it so that the triple bottom acts as a continuation pattern. For this edition, though, I am sticking with the traditional approach and saying that price should trend downward into the start of the chart pattern, emphasizing that it is a bottoming, reversal pattern.

Table 67.1 Identification Guidelines

Characteristic	Discussion
Appearance	Look for three minor lows, well separated and distinct, at the end of a downward price trend.
Price trend	Price trends lower into the triple bottom so that it acts as a reversal. However, sometimes the pattern will act as a continuation of the upward price trend.
Same price	The price variation among the three bottoms is minor. The center bottom should not be significantly below the other two, otherwise it is a head-and-shoulders bottom.
Volume	The overall volume trend is usually downward but may be high in each of the three bottoms. Volume is usually highest on the first bottom and weakest on the last one.
Breakout direction, confirmation	Breakout is always upward when price closes above the highest peak between the three bottoms. If it doesn't break out upward, then it's not a triple bottom.

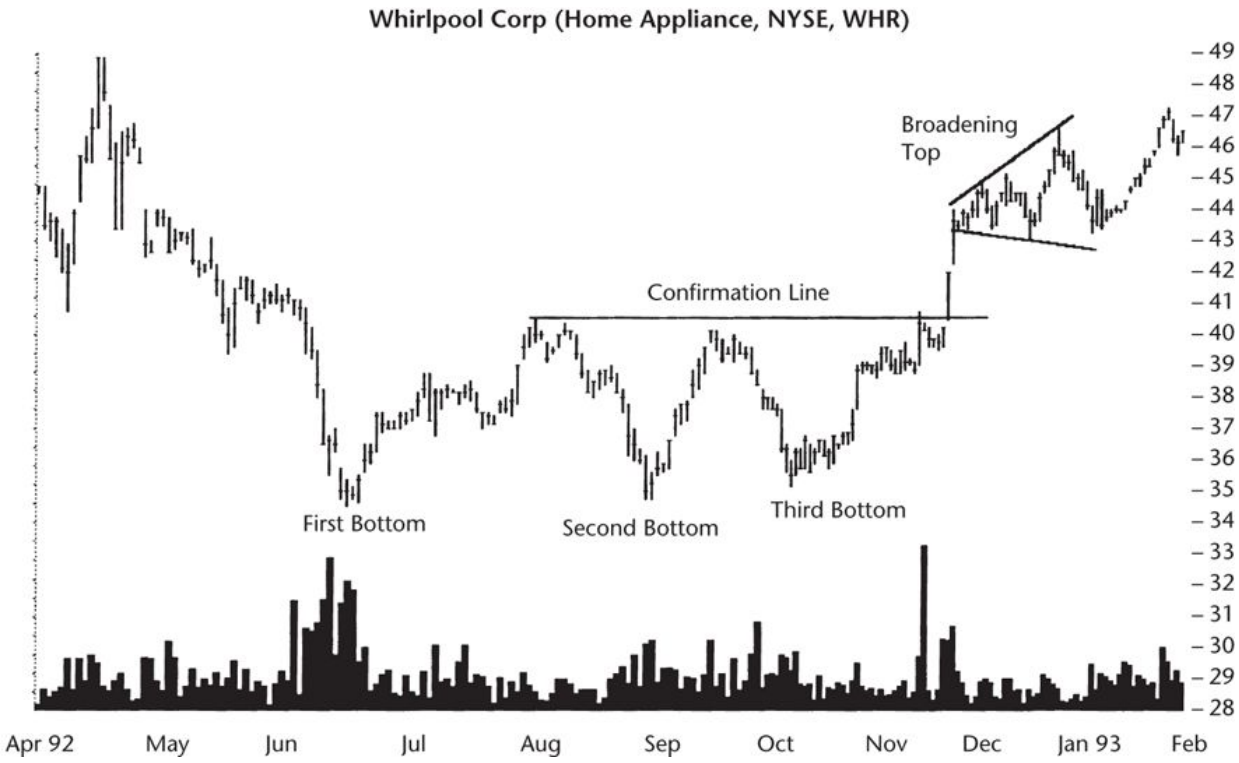


Figure 67.2 A triple bottom with three widely spaced, distinct troughs. A broadening top appears in mid-November.

The figure shows price on the far left of the chart well above the first bottom so that the price trend is downward to the first bottom.

Same price. Look for three valleys that bottom at or near the same price. Sometimes you'll see the middle valley slightly above the other two, which makes it easy to assign the triple bottom name to the pattern.

When the middle valley is below the other two, then you have to gauge if it's far enough below the adjacent valleys to call the pattern a head-and-shoulders bottom. It's a judgment call. Use the figures in this chapter for guidance of what to look for.

Volume. The volume trend usually recedes over the course of the pattern. Since triple bottoms tend to be long patterns, volume can appear ragged or irregular at times. Each of the three bottoms usually shows volume that peaks above the days leading to the bottom, with the first bottom usually having the highest volume of the trio. Don't discard a chart pattern because the volume pattern looks weird.

The volume trend in this chart pattern (see the figure) is downward with the largest concentration of high volume on the first bottom. The center bottom has subdued volume and is even lower on the third bottom in early October. Volume spikes upward as price rises to the confirmation point in mid-November.

Breakout direction, confirmation. In the triple bottom shown in the figure, price rises from the low of about 35 to the confirmation line just over 40. The confirmation line is the highest high reached between the three bottoms. It serves as the breakout point, the point to which price must *close above* before any three minor lows become a true triple bottom.

Focus on Failures

Once price reaches the confirmation line, it usually has been rising for about 3 weeks on average since the third bottom. Price often pierces the resistance line but doubles back, hesitating before continuing up.

In some cases, price rises above the confirmation point by less than 5% before throwing back and continuing down. When that happens, it is called a 5% failure. In this study of triple bottoms, all chart patterns must stage an upward breakout (a close above the highest high in the chart pattern) before being labeled a triple bottom. Since all patterns have upward breakouts, only 5% failures remain to wipe the warm glow of a successful investment from a novice investor's face. **Figure 67.3** shows an example of such a failure.

This is a triple bottom because price closes above the confirmation line in mid-September, confirming the three bottoms as belonging to a triple bottom. But the rise is brief—only 1 day has a close above the confirmation line before price tumbles.

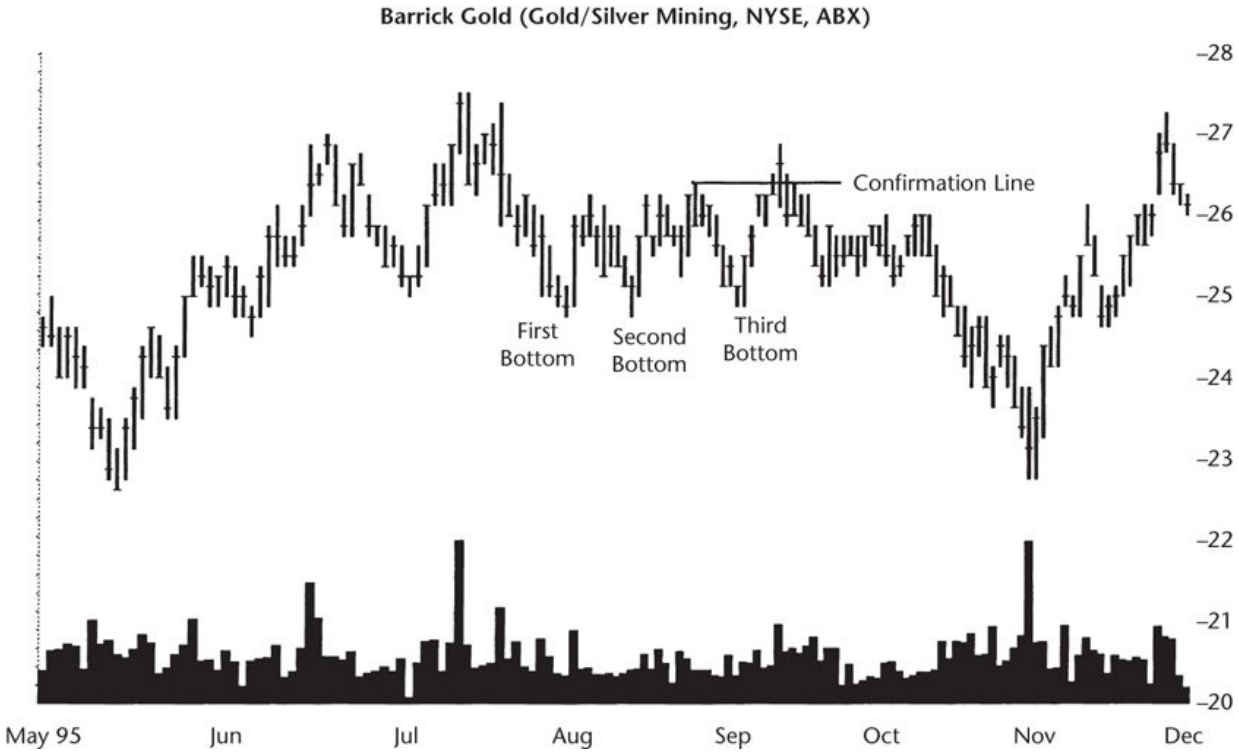


Figure 67.3 A triple bottom failure. This triple bottom fails to make a convincing upward run. It is a 5% failure because price fails to rise more than 5% before tumbling.

What are the signs of an impending failure? In this situation, the curved rise leading to the triple bottom suggests a rounded top. The volume pattern is suspiciously flat, but an irregular or abnormal pattern is common and should not automatically disqualify a triple bottom. Perhaps the most likely failure is not one of performance but of identification. Are the three bottoms well separated, each a significant minor low in its own right? Are the low prices near to one another without the center bottom being meaningfully below the other two?

As you look at the pattern, it should take on a striking appearance and almost shout, “Yes, I am a triple bottom!” There should be something familiar, a special quality that distinguishes a valid triple bottom from any other three-lump configuration. If it does not scream, “Buy me!” then you should probably look elsewhere.

Statistics

Table 67.2 shows general statistics.

Number found. I found oodles of triple bottoms, 3,105 in fact, which is odd because I think of triple bottoms as rare (apparently they are plentiful). I found them in 787 stocks, starting from July 1991 to April 2019, but not all stocks covered the entire period, and some stocks no longer trade.

Reversal (R), continuation (C) occurrence. Because price is supposed to drop into a triple bottom (by one definition, anyway), they act as reversals of the downward price trend when they break out upward.

Table 67.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,549	550
Reversal (R), continuation (C) occurrence	100% R	100% R
Average rise	46%	27%
Standard & Poor's 500 change	13%	–1%
Days to ultimate high	267	74
How many change trend?	58%	44%

Average rise. The average rise in bull markets is slightly above that posted by other bullish chart patterns, but the bear market rise is slightly below the average (of all other chart pattern types). Concentrate on finding and trading triple bottoms in bull markets.

Standard & Poor's 500 change. In bull markets, the index climbed 13%, helping lift the average rise of the triple bottom. In bear markets, the 1% decline is weak but still restrains the upward climb after a triple bottom breakout.

Days to ultimate high. By comparing the ratio of a 46% rise in 267 days in bull markets to a 27% rise in 74 days during bear markets, we find that price climbs more than twice as fast in bear markets as in

bull ones. I don't really understand why this is, but I've seen it in many other chart pattern types.

How many change trend? This is a measure of how many triple bottoms see price rise more than 20%. It's my attempt to compare how “trendy” a chart pattern is. I like to see values higher than 50% in the bull market. In bear markets, the value in the table is below the average for other chart pattern types.

Table 67.3 shows failure rates for triple bottoms. The rates start small if you consider 13% as “small,” but climb rapidly. For example, 13% of triple bottoms in bull markets fail to see price rise more than 5%. This figure doubles to 26% failing to rise more than 10% and almost triples (to 35%) the breakeven rate for a maximum price rise of 15%.

Notice that the bull market failures are smaller than the bear market ones, which is further evidence that you should avoid trading triple bottoms in bear markets.

Table 67.4 shows breakout-related statistics.

Breakout direction. The breakout is upward all of the time from a triple bottom by definition. A breakout happens when price closes above the tallest peak between the three bottoms. If price closes below the lowest valley in the pattern first, then it's not a triple bottom.

Yearly position, performance. Here's one of those head-scratchers. In bull markets the best performance comes from patterns with breakouts within a third of the yearly high. As the breakout price rises (from the lowest third to the highest third), performance improves.

Table 67.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	338 or 13%	70 or 13%
10	317 or 26%	87 or 29%
15	238 or 35%	91 or 45%
20	178 or 42%	61 or 56%
25	164 or 48%	59 or 67%
30	148 or 54%	38 or 74%
35	128 or 59%	28 or 79%
50	283 or 70%	56 or 89%
75	297 or 82%	29 or 94%
Over 75	458 or 100%	31 or 100%

Table 67.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 43%, M 45%, H 46%	L 31%, M 28%, H 23%
Throwbacks occurrence	65%	67%
Average time to throwback peaks	6% in 6 days	8% in 6 days
Average time to throwback ends	12 days	12 days
Average rise for patterns with throwbacks	44%	23%
Average rise for patterns without throwbacks	48%	34%
Percentage price resumes trend	76%	66%
Performance with breakout day gap	46%	28%
Performance without breakout day gap	45%	26%
Average gap size	$0.62	$0.55

In bear markets, we see the reverse. As the breakout price rises from the lowest third to the highest, performance decreases so that the lowest third has the best performance.

This is one of the reasons I suggest that if you short a stock, do so from patterns near the yearly low, not the yearly high.

Throwbacks. A throwback occurs in about two out of three trades, and it takes 12 days (on average) for the stock to return to the breakout price. When a throwback occurs, performance suffers.

For example, in bull markets, the average rise when a throwback happens is 44%. Without a throwback, the rise averages 48%. That's not because I'm looking at few samples, either (I used 2,549 in the test).

We've seen this kind of behavior in other chart pattern types, too.

After a throwback completes, the good news is that price resumes rising more than 66% of the time (on average).

Gaps. Gaps help performance, but not by a lot. To find this, I used the opening price the day *after* a gap as the buy price and measured the rise to the ultimate high. So if you didn't own the stock as it gapped up, you can still buy and participate in the better performance. Given that the percentages are close together, you probably won't notice the difference. You have to trade it perfectly and often, too.

Good luck with that.

Table 67.5 shows pattern size statistics.

Height. Tall patterns significantly outperform short ones. This is the kind of performance difference I like to see! In fact, height is the best indicator of future performance (for most chart patterns).

To use this finding, compute the height of the triple bottom from tallest peak to lowest valley (in the pattern). Divide the height by the breakout price (the tallest peak). If the result is above the median shown in the table, then you have a tall pattern. That's when you can break into song and tell the world that you've found a tall triple bottom.

Width. Wide patterns perform better than narrow ones. The performance difference isn't as big as for height, but it's there. I used the median length of the triple bottom as the separator between wide and narrow.

Table 67.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	51%	29%
Short pattern performance	40%	24%
Median height as a percentage of breakout price	9.9%	14.7%
Narrow pattern performance	43%	26%
Wide pattern performance	48%	27%
Median width	39 days	41 days
Short and narrow performance	39%	26%
Short and wide performance	44%	18%
Tall and wide performance	50%	30%
Tall and narrow performance	54%	27%

Height and width combinations. Here's where our tale gets confusing. We know that tall patterns outperform, and we know that wide patterns outperform. Don't you think that a pattern both tall and wide would outperform? They may, but tall and narrow patterns show the best performance in bull markets. Bear markets behave themselves with tall and wide patterns doing best.

Table 67.6 shows volume-related statistics.

Volume trend. I used linear regression on volume to determine slope. I found that volume trends downward over 60% of the time.

Rising/Falling volume. Triple bottoms with rising volume in bull markets tend to outperform those with falling volume. Bear market patterns don't care either way.

Breakout day volume. Heavy (above-average) breakout volume helps performance in both bull and bear markets. That's good news because it agrees with market lore.

Table 67.7 shows how often price reaches a stop location. I found this by watching as price climbed to the ultimate high. If it dipped along the way and moved into the triple bottom, then I screamed like a banshee and logged it.

I found that the top of the pattern will trip a stop placed there about three-quarters of the time. That sounds low but not if you consider that price might reach the ultimate high during a throwback. Price might return to the chart pattern, but it's after it reaches the ultimate high, so it doesn't count (for the statistics, anyway).

Placing a stop in the middle or at the bottom of the pattern will trigger less often than those placed at the top of the pattern. That makes sense, of course.

Table 67.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	61% down	62% down
Rising volume trend performance	48%	27%
Falling volume trend performance	44%	27%
Heavy breakout volume performance	47%	27%
Light breakout volume performance	41%	26%

Table 67.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	76%	74%
Middle	22%	14%
Pattern bottom	4%	1%

Table 67.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	44%
2000s	47%
2010s	45%
Performance (above), Failures (below)	
1990s	11%
2000s	11%
2010s	16%

Table 67.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	599 or 23%	138 or 25%
Single bust count	316 or 53%	96 or 70%
Double bust count	186 or 31%	30 or 22%
Triple+ bust count	97 or 16%	12 or 9%
Performance for all busted patterns	–14%	–20%
Single busted performance	–23%	–27%
Non-busted performance (triple top)	–14%	–22%

After you decide where to place a stop, remember to change the potential loss into a percentage of the current price to see how big the loss might be. You might want to adjust the stop location or abandon the trade entirely if you can't make the potential loss reasonable without unduly increasing the risk of a failed trade (by moving the stop too close).

Table 67.8 shows the performance over three decades.

Performance over time. For the last three decades, the average rise has been steady, with percentages around the mid-40s.

Failures over time. Failures have ticked higher in the most recent decade compared to the other two decades. Note that bear markets only happened in the 2000s, so they are not included in the statistics.

Table 67.9 shows busted pattern performance.

Busted patterns count. Almost a quarter of triple bottoms will bust. That means price climbs no more than 10% before dropping and closing below the bottom of the chart pattern.

Busted occurrence. I sorted the busted patterns into how often they busted, and the table shows the results. Single busts happened most often followed by double and triple+ busts, in that order. In some patterns, we see triple+ (meaning more than two busts) busted patterns placing second.

Table 67.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern's height from highest high to lowest low in the triple bottom. Add the height to the highest high. The result is the target price. The bottom portion of the table shows how often price reaches the target.
Wait for confirmation	Since most three-bottom patterns see price continue lower, always wait for price to rise above the highest high reached in the chart pattern (the confirmation price).
Trade the trendline	Draw a line connecting the highs. If it slopes down, buy when price closes above it.
Stop location	Use Table 67.7 for help with locating a stop. They're around here, somewhere.

Description	Bull Market	Bear Market
Percentage reaching half height target	88%	80%
Percentage reaching full height target	74%	55%
Percentage reaching 2× height	55%	28%
Percentage reaching 3× height	43%	18%

Busted and non-busted performance. The last three rows compare busted performance with non-busted patterns (triple tops, in this case).

Single busted triple bottoms outperform triple tops. However, if you short any busted triple bottom (meaning single, double, and more than two busts), performance is as good as (bull market) or worse (bear market) than the average triple top. What that means is if you want to short a busted upward breakout, then look for nearby support that might cause price to reverse after it busts, causing a double (or more) bust.

Trading Tactics

Table 67.10 shows trading tactics.

Measure rule, targets. The measure rule sets a price target so we can assess how often price might reach the target. To use the rule, subtract the lowest low from the highest high reached in the triple bottom and then add the difference to the highest high. The result is the target price.

For example, consider the triple bottom shown in Figure 67.4. The lowest low occurs on the first bottom at 24.68. Price reaches the highest high during the rally after the middle bottom, D, hitting 28.54 for a height of 3.86. Add the height to the highest high (D) and the target becomes 32.40. Price reaches the target at K.

The bottom portion of the table shows how often the stock reaches the target price. We used the full height measure in a bull market. The table says price will reach the target an average of 74% of the time.

For a closer target, cut the height in half and add to the highest high in the pattern. That will work 88% of the time.

Once you know the distance to the target, convert it into a percentage of the current price and check the result against Table 67.3. Using our example, the height is 3.86 and assuming the current price is the breakout price, 28.54, it gives a value of 14%. Table 67.3 says that in bull markets 35% of triple bottoms will fail to see price rise more than 15% (the closest entry to 14%). That means 65% of the trades will succeed, everything else being equal. Can you risk a 35% failure rate?

Wait for confirmation. When is a triple bottom not a triple bottom? When price fails to close above the confirmation price. Always wait for confirmation. On average, it takes about 3 weeks to get there, but it is well worth the wait. Waiting for confirmation means you'll avoid those patterns that break out downward.

Trade the trendline. In those patterns with a down-sloping trendline— a line joining the twin highs in the pattern—buy the stock when price closes above the trendline. That strategy will get you in sooner, lowering your risk of failure.

This idea is similar to using a neckline to enter a trade in a head-and-shoulders bottom. When the neckline slopes downward, it can signal

a better entry price.

Stop location. If you are so unlucky as to misidentify a triple bottom or perhaps catch one that fails, then be sure to place a stop-loss order at a location of your choice. Table 67.7 gives guidance for how often a stop will trip at various locations in the triple bottom.

Experience

The triple bottoms I've traded have all been on the buy side. Let me discuss some of them.

Albemarle

Albemarle (ALB) formed a triple bottom in early to mid-2004. The day after price broke out upward from the pattern, I was there with a buy order about 30 minutes before the close. I received a fill at a split-adjusted price of 15.63.

In my notebook, I wrote, “Mood (Will trade work? Bought too soon?): Not as confident as price dropped after I bought. I feel like I'm trading too often. Everything I buy is going up, and that means a crash is coming. I'm overtrading just because I feel so good doing it. Buy reason: Triple bottom at yearly high with upside breakout. Strong base below. Other diversified chemicals [companies] are trending higher. I expect this to continue moving up.”

I placed a stop-loss order at 14.19, a few cents below the prior minor low, for a potential loss of 9%. Two days after I bought, I raised the stop to 14.76, or 6% below my buy price.

Instead of the stock continuing to move up, it continued to move lower, even as I raised the stop. In other words, I bought on the day price peaked.

It took the stock about 3 weeks to decline to my stop price and take me out of the trade at 14.75, the low for the day. Then it climbed from there. So I bought at a peak and sold at a valley. Buy high. Sell low. The exact opposite of what you should do. Jeepers. I lost 6%.

I wonder if someone gunned for the stop (forced price down to trigger the stop). That day was a tall day (big high–low price spread). The stock climbed 38% above my sale price after I sold. That just made it worse.

I had the right idea, the right stock, and the stock climbed as I expected. But the stop-loss order took me out of the trade too soon.

- Lesson: I wonder if the stop was placed properly. I didn't find an explanation of why I raised the stop two days after I bought, even

as price dropped during those two days (forming a shark-32 pattern: a 3-day pattern with lower highs and higher lows).

Vertex Pharmaceuticals

A similar situation occurred in Vertex Pharmaceuticals (VRTX). According to my notebook, I bought in late into a triple bottom. However, looking at the chart shows that the triple bottom didn't break out (confirm) before I bought.

Anyway, the stock dropped far enough to hit my stop, handing me a 9% loss. The stock climbed 17% and then dropped 28% before making a 419% rise. If I had waited for confirmation before buying, I would have participated in that huge rise.

Cemex

Cemex (CX) in late 2007 showed a different scenario. The stock formed a triple bottom, which confirmed as a valid pattern. Price broke out upward, soared, and within a few weeks had returned to the breakout price in a classic throwback. That's when I bought.

Here's my notebook: “27 October 2007. This appears to be making a triple bottom, so I am going to buy at market open on Monday. The others in the industry are showing strength. [The company] said they will try to raise prices next year but noted the US housing market is weak and that's hurting profits and revenues. They also see the weakness as ‘temporary.’ If this drops below the triple bottom low, then it's exit time: 28.23 for a 7% loss. This sounds like a losing situation to me. Profits and revenues will fall in the coming quarters, but the stock is cheap, historically. Hope it doesn't become cheaper.”

Because of my fear of a losing trade, I cut the trade size by 29%.

I bought on the day price peaked. It dropped thereafter, dropping below the bottom of the triple bottom and hitting the stop. “Date sold: 5 November 2007. Order details: I placed a stop order to sell it at 27.99, a penny below the prior day's low, but it filled at 27.89. Strong downdraft on the open. Sell reason: hit stop.” I lost 9% on the trade and feel glad that I cut the position size.

- Lesson: Trying to determine when a throwback has completed and price resumes rising can be difficult. Price *did* look as if it was rising (it had bottomed 4 days prior) when I bought, but it reversed. In fact, my buy price was a few cents above the triple bottom's high, so it was like breaking out upward for a second time.

I was happy I sold because the bear market took the stock down to 4.01, or 86% below my sale price.

Sara Lee

In Sara Lee (SLE) in early 2006, I spotted a triple bottom in the making. The stock had been trending downward since peaking in January 2005. Now (2020), I avoid trying to catch a falling knife (bottom fishing) in issues that drop for long periods of time like this one did for a year.

“Buy reason: Flat shelf on triple bottom, between 2nd and 3rd bottom. Price has closed above the shelf top. I wanted to place a buy stop to get in a penny above the shelf, but I forgot to yesterday. Today, price zoomed up. *Oops*. You can also consider this an AEDB [Adam & Eve double bottom], confirmed today.”

What this means is that I bought (at 18.00) near the third bottom and did not wait for confirmation of the triple bottom. I placed a stop and raised it to 17.66 on 17 March.

On 29 March, I sold. “Sell reason: Price broke out downward from a congestion region, so I think it will continue lower. This morning, the futures market has rallied, and they say the US markets will also open up strongly, in part as a snapback rally from yesterday's Fed [Federal Reserve] interest rate rise and overreaction in the Dow [industrials] (a selloff).

“The stock started to rally yesterday just after 3:00 p.m. EST, and my guess is the rise will continue into today's open. If that's true, then I have a 5 cent trailing stop ready to be executed. If not, then the stock should bottom in 30 minutes to 1 hour into the trading [session], and then I'll place the trailing stop, ride price up, and exit rich! Okay, maybe not, but for a small loss anyway. This stock didn't behave as I expected, so it's time to get out.”

I sold at 17.83 and took a 1% loss. The stock went down a bit, up a bit, and then continued lower where it dropped 14% in one session.

In Forest Oil Corp (FST) and Rohm and Haas (ROH), I also bought before confirmation and suffered the consequences when the triangle didn't confirm.

- Lesson: If I had waited for confirmation, I would have never entered this trade (SLE) because the triple bottom never confirmed.
- Lesson: If a trade doesn't work as expected, then get out.

Sample Trade

Russell is an engineer working in the telecommunications industry. He once said that the half-life of an engineer's knowledge is 10 years. “After twenty years, there's nothing left! That's when it's time to hide from management.” Before his time comes, he hopes to have a nest egg of funds accumulated from investing in stocks with which he is familiar.

He is a player, a position trader who might be in a stock for a week or two, while at other times he takes a longer view. Occasionally, his positions last for years; these are the most profitable.

He had a buy stop in place a penny at the top of the triple bottom shown in **Figure 67.4**. I show the triple bottom as ABC. The top of the pattern is at D, and he bought into the stock at E, at 28.55.

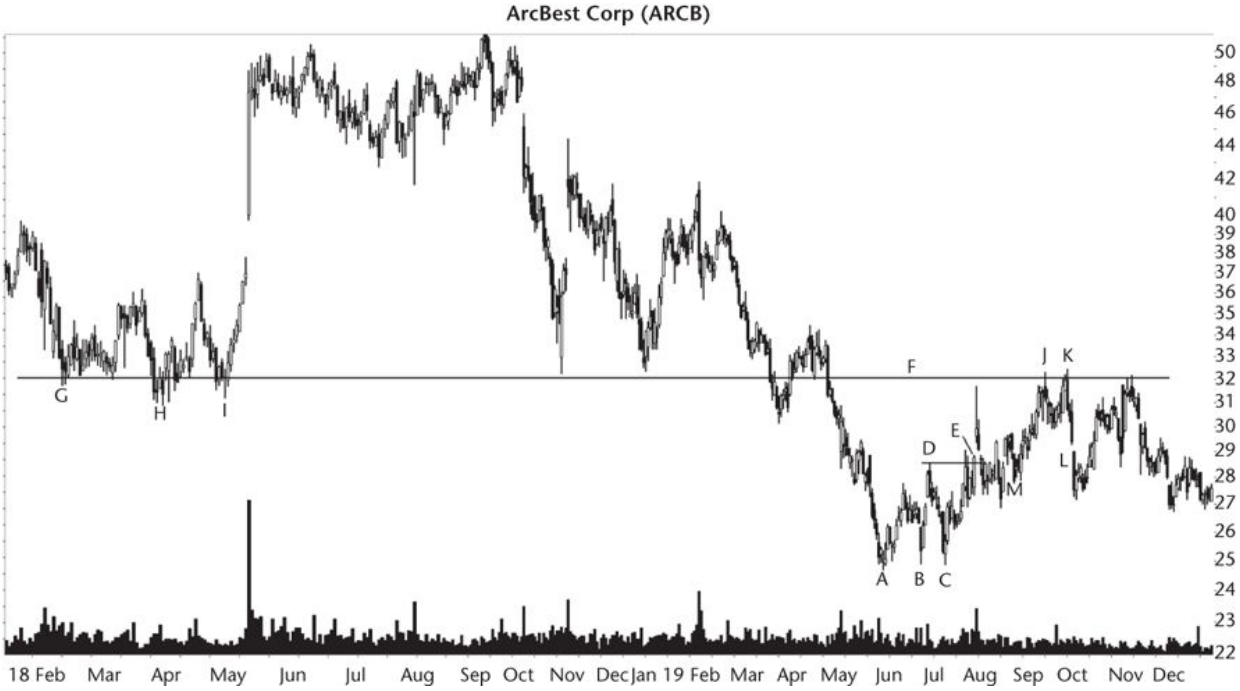


Figure 67.4 Russell had high hopes for this triple bottom trade, but the stock couldn't penetrate overhead resistance.

“I placed a stop below the lowest of the three bottoms” (the first one), at 24.67, for a potential loss of 14%. “The potential loss was higher than I like, but ...” he said and shrugged.

He wanted to hold this for the longer term but noted overhead resistance (line F) set up by a triple bottom in early 2018 (turns GHI). Notice how GHI might be a head-and-shoulders bottom except H and I are too close in price to one another.

The stock gapped up a day after he bought, and he was thrilled, but it lasted only a day before price started retracing.

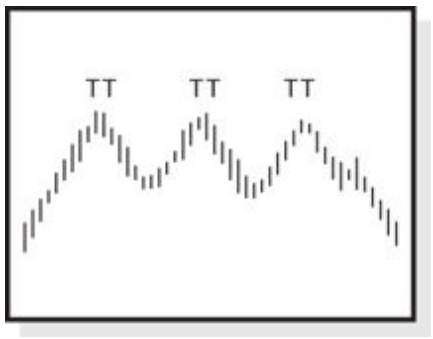
The retrace continued but didn't take the stock down much before it resumed rising to peak at J. When the stock reached J and left a defined peak on the chart, he raised his stop to just below the minor low at M. That narrowed his potential loss considerably, to less than 3% (unless price gapped down, of course).

A double top appeared at JK, which confirmed in a strong push lower. Combined with overhead resistance (F) that he noted before he bought, Russell decided to sell. “It's not going to be able to push through it [resistance] this time,” he told me.

He placed an order to sell at the open (L) and received a fill of 29.00. He made 1.5% on the trade.

The stock recovered to 32 as the chart shows, but then Covid-19 came along and sent the stock to the hospital where it reached a low of 13.54, a drop of 53% below his sale price.

68
Triple Tops



RESULTS SNAPSHOT

Appearance: Price trends upward and builds three distinct minor highs at about the same price level with price breaking out downward.

Downward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	24 out of 36	10 out of 19
Breakeven failure rate	25%	8%
Average decline	14%	22%
Volume trend	Downward	Downward
Pullbacks	66%	66%
Percentage meeting price target	49%	53%
See also	Broadening formations, right-angled and descending; broadening tops; broadening wedges, descending; head-and-shoulders tops; head-and-shoulders tops, complex; triangles, ascending; three falling peaks	

Triple tops remind me of some mountains in New Mexico or the drumlins in upstate New York. A mountain or hill soars above a flat plain. They look odd because they stand alone. I love those mountains, but triple tops are another matter. As bearish patterns, they predict a price downturn, and that is never a good omen for traders owning a stock.

The performance rank is mid-list in bear markets and worse in bull markets. In bear markets, the failure rate is low, 8% (ranking eighth where 1 is best), and that's terrific. In bull markets, failures are three times higher. *Ouch*. I understand that bull markets try to push price up and bearish patterns will struggle to perform under those conditions. The results suggest that you should trade triple tops only in bear markets, and even then you may need to hold your nose (and your wallet or purse).

Let's look at triple tops so we can better understand this pattern.

Tour

Figure 68.1 shows a triple top on the daily scale. The pattern reminds me of a rollercoaster as price climbs the first hill. Then it is over the top to glide down the slope and up to the next high and over the third one as well. After the final peak, price declines for the intermediate term, pausing at the confirmation line while deciding which route to take.

Price pulls back to the triple top confirmation line, and begins creating a new chart pattern, a head-and-shoulders top. Price closing below the neckline seals the fate of the stock. Price tumbles in a straight-line fashion until reaching a low of 37, a decline from the triple top high of 50.

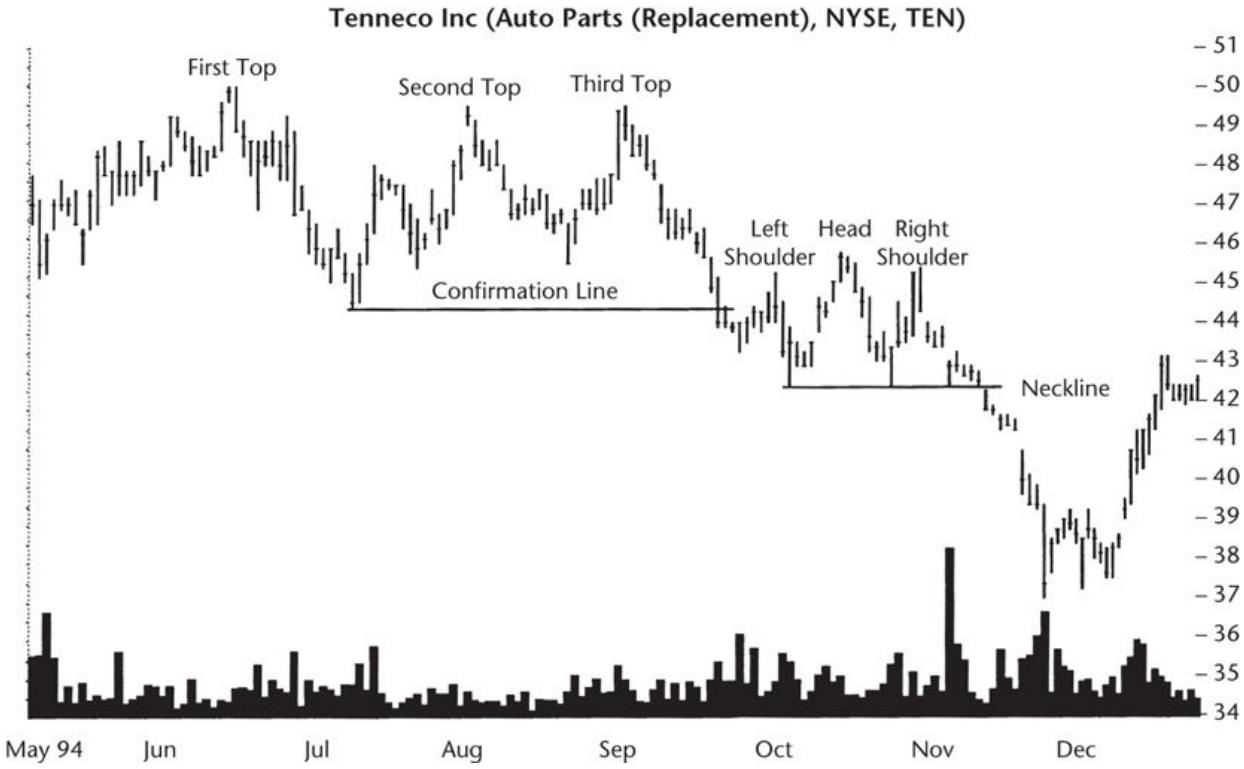


Figure 68.1 A triple top has three peaks and a pullback usually follows. A head-and-shoulders top forms at the confirmation point, signaling further weakness.

The three peaks of the triple top form at about 50 and have two valleys between them. The lower of the two valleys marks the confirmation point, the level to which price must decline (close below) to confirm the validity of the chart pattern. After confirmation,

price usually pulls back to the confirmation price before continuing lower.

Notice how the second top in this triple top is below the other two but the head-and-shoulders top has a head above the adjacent peaks.

Identification Guidelines

Table 68.1 outlines identification guidelines for triple tops.

To see another example of what a triple top looks like, study **Figure 68.2**. The three tops are pointed, well separated, and distinct in this example. The three minor highs are obvious, and that is important in any chart pattern. If other investors do not recognize a chart pattern for what it is, they will not try to take advantage of it. If they do not buy or sell appropriately, the pattern will fail. Chart patterns are a self-fulfilling prophecy that depend on the crowd behaving the same way.

All three peaks top out at about the same price with the center peak a bit recessed from the other two. This feature is common as quite a number (25%) of triple tops have a lower center peak.

Table 68.1 Identification Guidelines

Characteristic	Discussion
Appearance	After price trends upward, look for three minor highs, well separated and distinct, followed by price closing below the bottom of the chart pattern.
Price trend	Price should rise up to the triple top. The rise need not be long or steep, but the triple top should have something to reverse.
Same price	The price variation among the three tops is minor. The center top should not be significantly above the other two, otherwise it is a head-and-shoulders top. There is a tendency for smaller triple tops to be one of the broadening family of chart patterns, especially the right-angled variety, so pay attention to the price lows, too.
Volume	The volume trend is usually downward but may be hard to read. Often the volume pattern is flat except near each of the three peaks. The first peak often has the highest volume. Do not discard a triple top because of an unusual volume trend.
Breakout direction, confirmation	Price must close below the lowest low between the three tops (the confirmation point) or it is not a triple top. An up-sloping trendline drawn connecting the valley lows can also serve as confirmation when price closes below it.

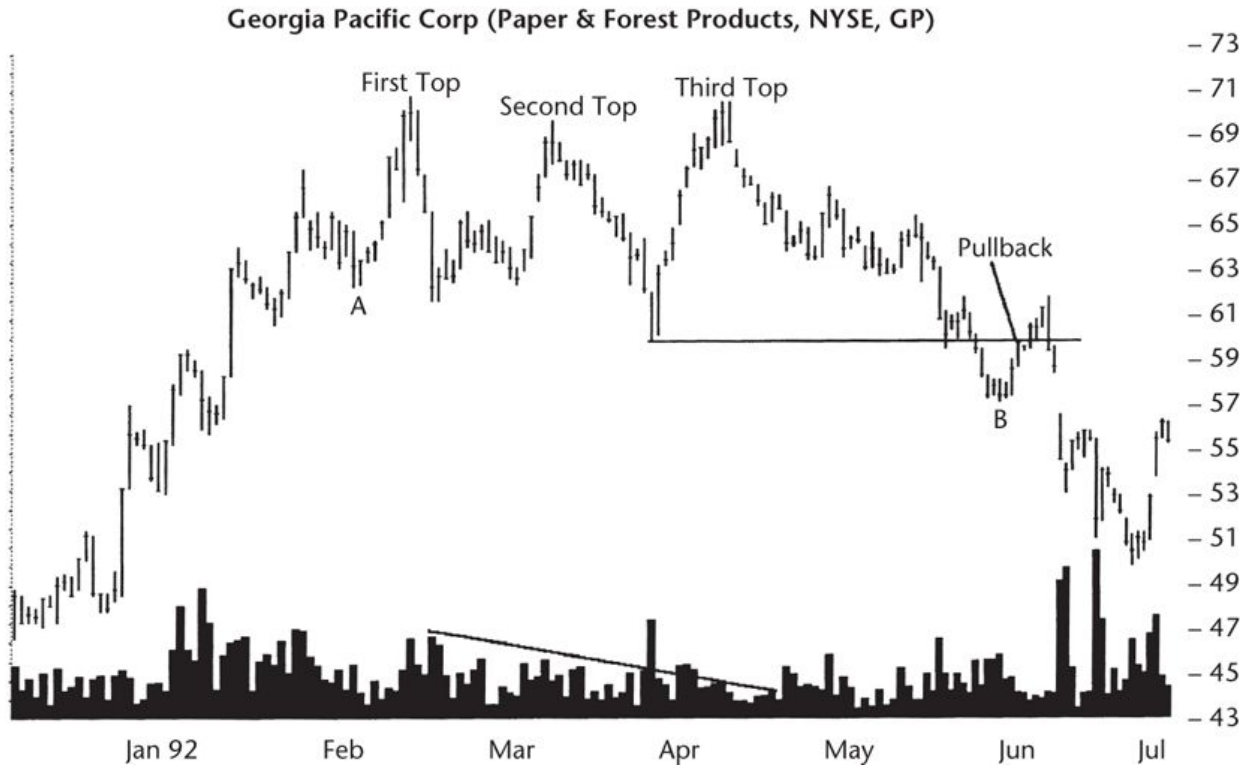


Figure 68.2 This triple top shows three distinct widely spaced tops at nearly the same price level.

The receding volume trend is clear in the figure with the first peak witnessing the highest volume of the three.

An interesting development in this chart pattern is a trendline drawn below the lows (not shown but it connects points A and B on the chart). With another trendline drawn horizontally across the three tops, the pattern takes on the appearance of a right-angled descending broadening top.

In many triple tops, the broadening formation also appears. This occurrence does not diminish the validity of the triple top; it just makes both formations easier to trade (because you can buy or sell at the trendlines and take advantage of partial rises or declines).

Appearance. When searching for a triple top or verifying that the three bumps on a price chart belong to the pattern, look at the high price of each peak. They should be priced near one another. A center peak that towers above the other two suggests the pattern is a head-and-shoulders top. When the tops consistently inch upward, the

activity suggests a broadening top. Three consecutively lower peaks could be a three falling peaks pattern.

While looking at the three peaks, do not ignore the lows. The formation may be a right-angled descending broadening top or even a descending broadening wedge if the three peaks are moving down slightly in price.

In the case of a right-angled broadening top, you can probably make money on the triple top pattern even before the broadening top breaks out. At least with a broadening formation, you can anticipate when it will be time to close out your position (do so when price approaches the lower, down-sloping, trendline).

Price trend. Price should trend upward into a triple top so that the pattern acts as a reversal of the upward trend. In some cases, price drops into a triple top and the pattern acts as a continuation pattern. Those do occur, but are rare. In the future, I may study them separately, but this edition has them all lumped together.

Same price. Make sure the three well-separated peaks are not part of the same congestion pattern. Each top should be a part of its own minor high, a distinct peak that towers above the surrounding price landscape. The price difference between the three peaks is usually minor. A large price variation should exclude the pattern from consideration, but be flexible.

Volume. The overall volume trend is usually downward and lackluster, but varies from pattern to pattern. Volume on the three peaks, especially the first one, is higher than in the valleys. Do not discard a triple top because volume doesn't conform to the standard pattern.

Breakout direction, confirmation. The three-bump pattern confirms as a triple top when price closes below the lowest low in the pattern. Without confirmation, you do not have a triple top.

Alternatively, an up-sloping trendline drawn across the bottoms of the two valleys can also serve as confirmation when price closes below it. Often, this approach will allow you to enter a trade sooner and at a better price.

Figure 68.3 shows an example of a triple top on the weekly scale. Even though the average triple top sports a 14% (bull market) to 22% (bear market) decline after the breakout, price occasionally falls much farther.

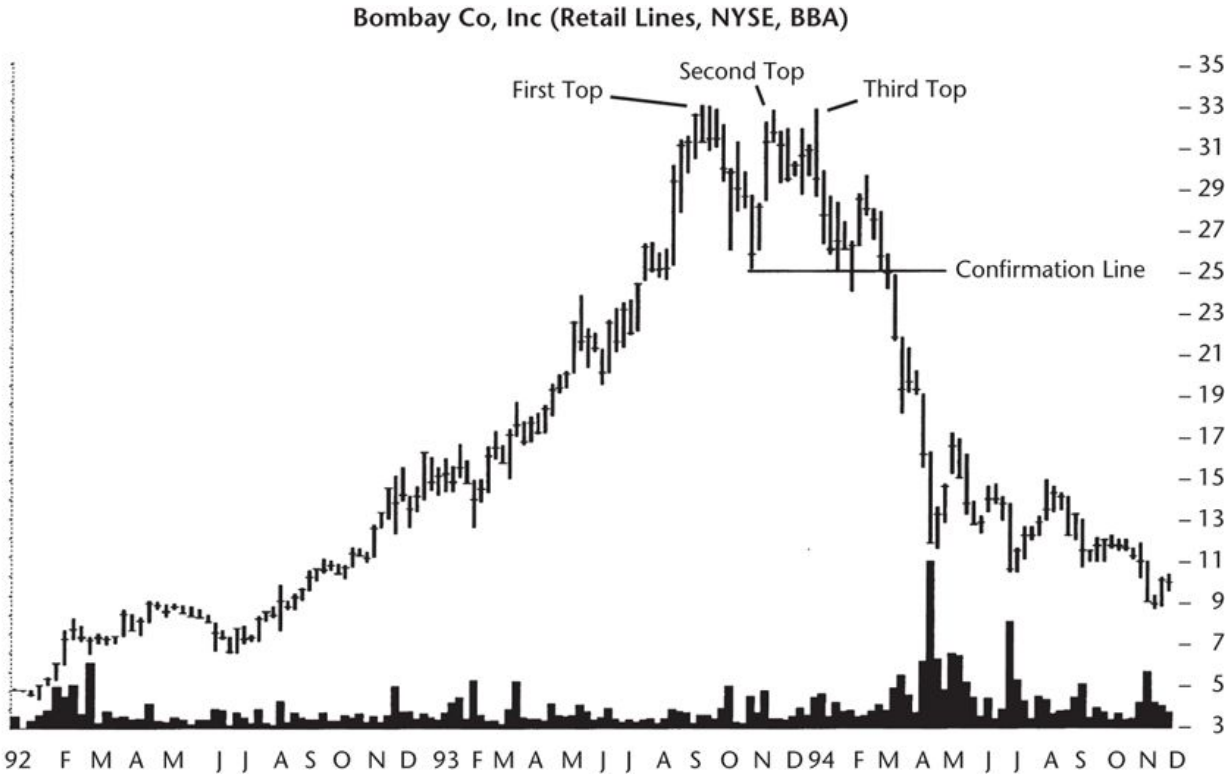


Figure 68.3 Triple top reversal on the weekly scale. The triple top marks the high point for the stock.

As you can see in the chart, the triple top marks the peak in the stock. From the high of 32.94, the stock plummets to 4.75, a stomach-churning decline of 86% in 2 years.

The chart also suggests some lessons. Sometimes the buy-and-hold strategy does not work. Whether you sold a bit early or a bit late, anything would have been better than riding the stock all the way up and all the way back down.

Do not laugh; I have done it myself, but not with this stock. It is probably a mistake we all have made at one time or another and hope never to make again. Unless you use stops, you will probably make it again (and even then you can face surprises when price gaps open 67% lower). You will watch all your profits evaporate as a stock declines while you continue hoping it will turn around. Then, just

after you get disgusted enough to sell, price bottoms and starts recovering.

Focus on Failures

The failure rate of triple tops is high in bull markets (25%) but much lower in bear markets (8%). A triple top fails when price breaks out downward and drops no more than 5% before turning around and heading meaningfully higher. This is a key point. Price must decline to the confirmation price, the lowest low reached in the pattern. If price does not decline to that price, then the three-bump pattern *is not a triple top*—it is just a collection of minor highs (or, perhaps, some other chart pattern).

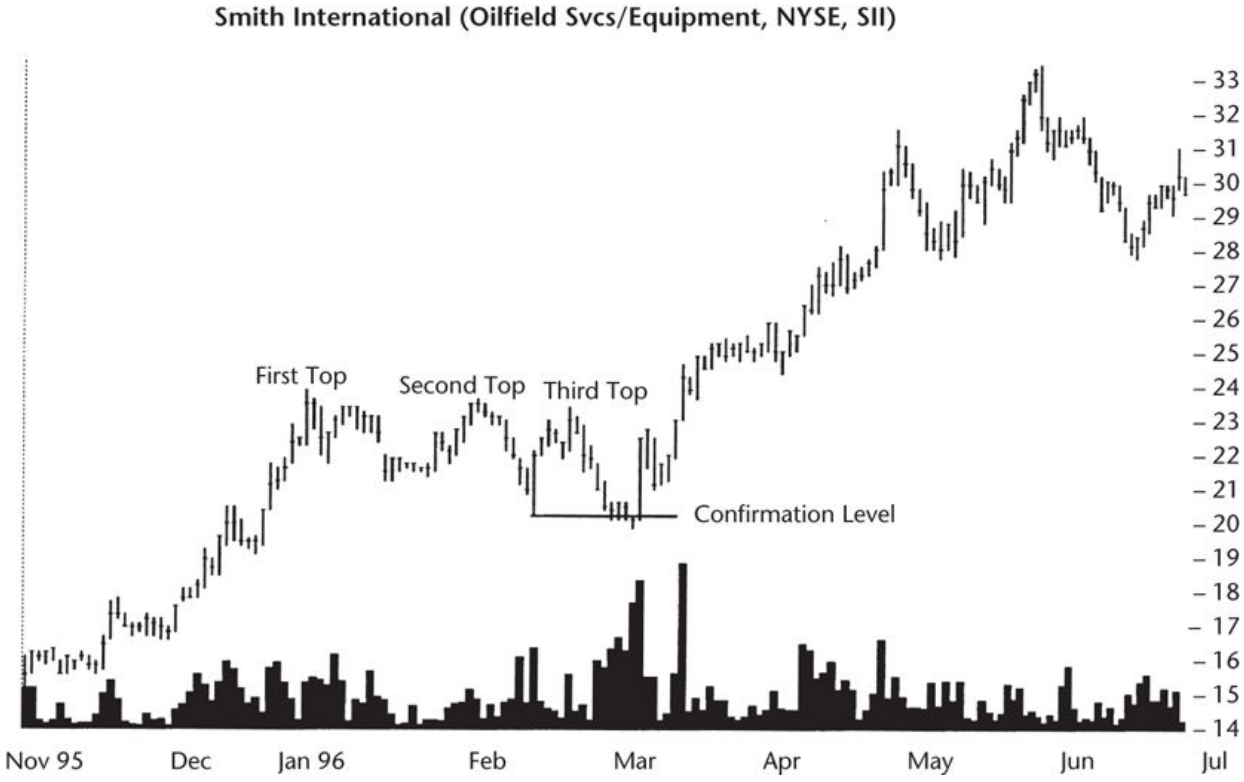


Figure 68.4 This is an example of a 5% failure where price fails to continue moving down by more than 5% before turning around. Strong industry trends were instrumental in turning around the stock.

Figure 68.4 shows a typical example of a 5% failure. The three tops are distinct minor highs that form after a 2-month spurt upward. It is not surprising that the stock needs a rest and decides to retrace some of its gains—a common occurrence. That sideways move forms the triple top.

The February valley is the lowest one in the pattern at 20.25. Price closes below that in March at 19.88, staging a downward breakout (although it's hard to see in the figure). Price confirms that this pattern is a valid triple top.

Had you sold this stock short at the confirmation point of 20.25, you should have covered your trade once price climbed above the highest high in the pattern, in this case, 23.88. This tactic would have kept losses to a rather large 18%, but that is certainly better than hoping for a decline while watching it rise to 33!

Sometimes, it is difficult to determine exactly why a stock fails to perform as expected. Often fundamentals are the key. In this case, the oil-field services sector was improving due to an increase in exploration activity and deep water drilling. In late January, the Federal Reserve cut two key interest rates by 0.25% giving hope that the stimulus would boost the health of the overall economy (or warning of future difficulty, hence the need to cut rates).

On the technical front, if you draw trendlines along the three tops and the minor lows, the pattern takes on the appearance of a descending broadening wedge since the three tops are at consecutively lower prices. With the wedge, it is difficult to predict in which direction the breakout will occur. The formation serves as a resting place for the stock as it gathers strength for the next up leg.

One could view the pattern as the corrective phase of a measured move up formation. The price prediction of the measured move fulfills quickly when price climbs to 28.88 in late April.

Statistics

Table 68.2 shows general statistics for triple tops.

Table 68.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,964	677
Reversal (R), continuation (C) occurrence	100% R	100% R
Average decline	–14%	–22%
Standard & Poor's 500 change	–3%	–11%
Days to ultimate low	56	40
How many change trend?	26%	49%

Number found. I found 2,641 patterns in 828 stocks with the first one appearing in July 1991 and the most recent in May 2019. Not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. By definition, a triple top reverses the upward price trend when it breaks out downward. Although continuation patterns do happen from time to time, I didn't separate them from reversals.

Average decline. The average decline of triple tops in bear markets is 22%, considerably more than the 14% decline in bull markets. Because triple tops are bearish chart patterns, it makes sense that they would perform better in bear markets than in bullish ones.

Standard & Poor's 500 change. If you compare the average decline (14%, 22%) with the market decline (3%, 11%), you can see the market influence on triple top performance. Bear markets help stocks decline. This finding suggests that you short a stock in bear markets or sell a long holding before the cleaners find you.

Days to ultimate low. In bull markets, it takes about 2 months to reach the ultimate low and about 1.5 months in bear markets. Comparing the average decline in both markets by how long it takes to get there, we find that price drops 2.2 times as fast in bear markets as in bull ones.

This finding emphasizes the need for stops. Without a stop, if you are not careful, your loss can grow to huge proportions quickly, especially in bear markets.

How many change trend? This row counts how many triple tops see price drop more than 20% after a downward breakout. The higher the percentage, the easier it might be to make money trading the chart pattern. That's my theory anyway.

The bull market is slightly below the average for other chart pattern types, but the bear market is spot on.

Table 68.3 shows failure rates for triple tops. Clearly, the bear market numbers show fewer failures than the bull market. For example, 8% of the triple tops I looked at in bear markets failed to decline more than 5%. Half, 51%, failed to drop more than 20%.

Table 68.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	496 or 25%	52 or 8%
10	442 or 48%	77 or 19%
15	298 or 63%	110 or 35%
20	215 or 74%	104 or 51%
25	151 or 82%	89 or 64%
30	122 or 88%	63 or 73%
35	89 or 92%	63 or 82%
50	121 or 98%	88 or 95%
75	29 or 100%	31 or 100%
Over 75	1 or 100%	0 or 100%

In bull markets, the result is even worse with 74% failing to drop more than 20%.

The table says the odds do not favor the stock making a large decline. For example, suppose the measure rule gives a target of 35 in a $50 stock. That's a 30% drop. The table says that 73% to 88% of the stocks will fail to drop that far.

Table 68.4 shows breakout-related statistics.

Breakout direction. Triple tops have downward breakouts only. If price closes above the top of the pattern before breaking out downward, then it's not a valid triple top.

Yearly position, performance. The best performance comes from triple tops with breakouts near the yearly low. Avoid those near the yearly high. It's reassuring (meaning the trend is consistent) to see that the further away from the yearly low you go, the worse the performance in both markets.

Pullbacks. Pullbacks occur two-thirds of the time, and it takes price 12 days on average to return to the breakout price.

When a pullback occurs, performance suffers. For example, in bear markets price declines 21% after the breakout when a pullback is present. Without a pullback, the decline measures 25%. If you can select a triple top that does not have a pullback, then good for you! Looking for nearby (within 6% to 10% below the breakout price) underlying support where price might reverse may help.

After a pullback completes, the stock resumes dropping 57% of the time. That also means 43% of the time the stock finds the ultimate low as price drops before pulling back.

Table 68.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –17%, M –15%, H –13%	L –24%, M –22%, H –21%
Pullback occurrence	66%	66%
Average time to pullback bottoms	–6% in 6 days	–10% in 6 days
Average time to pullback ends	12 days	12 days
Average decline for patterns with pullbacks	–14%	–21%
Average decline for patterns without pullbacks	–16%	–25%
Percentage price resumes trend	57%	57%
Performance with breakout day gap	–15%	–22%
Performance without breakout day gap	–14%	–22%
Average gap size	$0.86	$1.12

Gaps. Gaps that appear during the breakout from a triple top don't cause the stock to drop much farther than those without gaps.

Table 68.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones in both bull and bear markets. I applaud their consistency.

To use this finding, measure the height of the triple top from tallest peak to lowest valley between the three peaks and divide by the price of the lowest valley. If the result is larger than the median shown in the table, then you have a tall pattern.

Width. Width isn't a good predictor of future performance, at least not as good as height. Wide patterns perform better in bull markets. I use the median width to separate wide patterns from narrow ones.

Height and width combinations. Patterns that are both tall and wide outperform the other combinations (most of the time, anyway). Avoid short patterns, either wide or narrow, because they perform worst. See the table for details.

Table 68.6 shows volume-related statistics.

Volume. Volume trends downward 60% or more of the time in triple tops, on average. As I mentioned before, don't discard a pattern if it shows volume increasing. Why? Because the table says there's almost no performance difference for triple tops with rising and falling volume, heavy or light breakout day volume.

Table 68.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–17%	–24%
Short pattern performance	–12%	–21%
Median height as a percentage of breakout price	9.7%	16.9%
Narrow pattern performance	–13%	–22%
Wide pattern performance	–15%	–22%
Median width	38 days	43 days
Short and narrow performance	–12%	–21%
Short and wide performance	–12%	–20%
Tall and wide performance	–17%	–23%
Tall and narrow performance	–17%	–21%

Table 68.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	62% down	60% down
Rising volume trend performance	–14%	–22%
Falling volume trend performance	–15%	–22%
Heavy breakout volume performance	–15%	–22%
Light breakout volume performance	–14%	–22%

Does that surprise you? If you read some technical analysis texts on the subject, they'll often write something like, “If breakout volume doesn't spike, then don't trade the pattern.” Table 68.6 says it doesn't matter for triple tops (but it might for other chart patterns).

Table 68.7 shows how often price reaches a stop location. I checked triple tops to see where the best place to stick a stop-loss order was. If you place it at the top of the pattern, it will rarely be hit as price drops to the ultimate low. Hide it at the bottom of the pattern and you'll likely be stopped out.

I knew a novice trader who placed his stops a few cents away from the current price. He continued to be stopped out within a few days, taking a small loss each time. He couldn't face the idea of risking more money by moving his stop farther away.

Don't be like him. Place your stops at a reasonable distance from the current price. Then convert the potential loss into a percentage of the current price and see if you need to adjust the stop location according to your tolerance for loss.

Sometimes, a stock is so volatile that you'll want to keep the stop farther away. A volatility stop may assist in determining the best location. Visit the Glossary for details and tell them Tom sent you.

Table 68.7 How Often Stops Hit

Description	Bull Market	Bear Market
Pattern top	2%	1%
Middle	17%	10%
Pattern bottom	72%	69%

Table 68.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–17%
2000s	–13%
2010s	–14%
Performance (above), Failures (below)	
1990s	16%
2000s	30%
2010s	27%

Table 68.8 shows the performance over three decades. I don't include bear markets because they happened only in the 2000s.

Performance over time. The 1990s showed the best performance, but returns have leveled off in the most recent two decades.

Failures over time. Failures were worst in the 2000s and best in the 1990s. The 1990s had the fewest samples, though (71). The other two decades had two or three times as many samples. I'm just throwing that out to see if it sticks. It might explain the differences.

Table 68.9 shows busted pattern performance.

Busted patterns count. Triple tops bust a lot in bull markets (almost half will bust). Notice that only 14% bust in bear markets.

Busted occurrence. I sorted busted patterns by how often they busted. Single busts occur most often, as one might expect, but triple+ (more than two busts) place second. We've seen this happen in other chart patterns, too. Figure 68.5 shows a triple+ busted pattern. Price turns like a corkscrew.

Table 68.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	848 or 43%	97 or 14%
Single bust count	566 or 67%	64 or 66%
Double bust count	23 or 3%	5 or 5%
Triple+ bust count	259 or 31%	28 or 29%
Performance for all busted patterns	42%	34%
Single busted performance	60%	48%
Non-busted performance (triple bottoms)	46%	27%

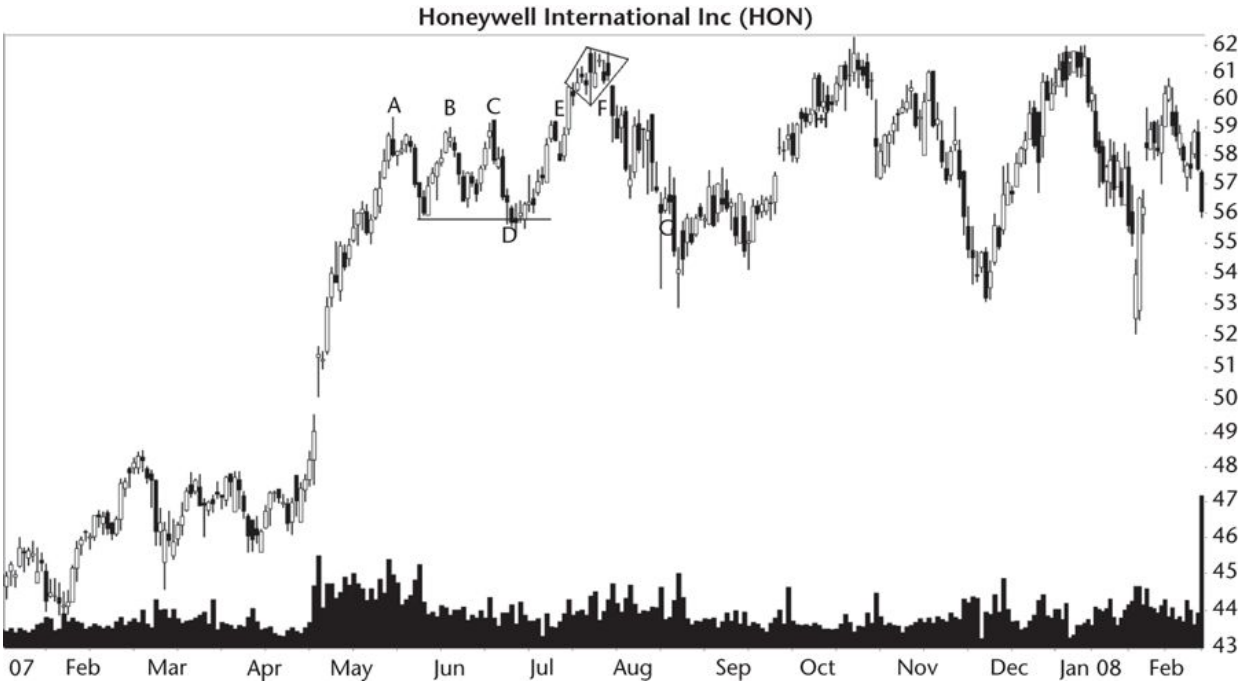


Figure 68.5 A trade in a busted triple top didn't work as well as planned.

Busted and non-busted performance. I use triple *bottoms* as proxies for non-busted triple tops. I wanted to compare how busted patterns perform with their non-busted counterparts.

The best performance happens after trading single busted triple tops. How do you know it will single bust and not triple+ bust? The answer

is you don't except to say that two out of three busted patterns will be single busts. So the probabilities are on your side.

Perhaps you should focus on the 60% average rise for single busted patterns in bull markets. That should be an incentive to consider trading triple tops. As dreadful as the performance of a non-busted triple top is, it does have value (when it busts).

Do your homework on the company, and when price closes above the top of the highest peak, consider buying the stock and enjoying the ride upward. Just remember anything can happen along the way to the ultimate high.

Trading Tactics

Table 68.10 shows trading tactics. Before you consider trading a triple top, ask yourself, why would you want to? The failure rates shown in Table 68.3 are huge. Price typically won't drop far after a breakout. There are exceptions, of course, so you can't just ignore the bearish implications of the triple top. But if selling a long-term buy-and-hold position because you fear a large decline, remember the taxman will have his hand out, waiting for his share. Even if the stock drops, it'll likely recover, given enough time.

Table 68.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	Compute the pattern's height by subtracting the lowest low from the highest high in the triple top. Subtract the height from the lowest low. The result is the target price. The bottom portion of the table shows how often price reaches the target.
Wait for confirmation	Since price after most three-top patterns continues rising, always wait for price to break out downward before selling or shorting.
Trade the trendline	Draw a trendline connecting the two valleys. If the line slopes upward, the pattern confirms when price closes below the line. Trade after pattern confirmation.
Wait for pullback	The majority of triple tops have pullbacks, so if you miss the breakout, place or add to your short position once price begins heading back down after the pullback.
Stop location	Table 68.7 can help with stop location.
Busted trade	Consider trading a busted triple top in bull markets.

Description	Bull Market	Bear Market
Percentage reaching half height target	72%	78%
Percentage reaching full height target	49%	53%
Percentage reaching 2× height	24%	23%
Percentage reaching 3× height	13%	12%

Measure rule, targets. Use the measure rule to help pick a target to help determine how far down the stock might drop.

Begin with computing the height of the triple top by subtracting the lowest low from the highest high reached in the chart pattern. Subtract the height from the lowest low to give you a target price.

Figure 68.6 makes the computation clearer. The lowest low of the triple top occurs in late December when price touches 17.75 briefly.

The third peak harbors the highest high, 23.38. The difference, 5.63, is the height. Subtract the height from the lowest low to arrive at a target price of 12.12 (that is, 17.75 – 5.63). The figure shows price reaching the target in mid-June.

To better gauge the veracity of the result, you might look at the predicted decline in percentage terms. From the confirmation point (the lowest low) of 17.75, a 5.63-point decline is a loss of 32%. Table 68.3 indicates that less than 12% of triple tops in bull markets have losses more than 30%. Those are terrible odds.

In such a situation, and in most cases, you should look for support levels. Price indicates support when it declines to a level and then rebounds. For example, the stock paused at $16 during July and August 1991 (not shown in Figure 68.6). This pause showed support where the stock again paused during April (shown). Eventually, the stock worked through the support and tumbled to a lower support level.

The lower portion of Table 68.10 shows how often price reaches a target. In bull markets, for example, using the full height like we did in our example, the stock will reach or exceed the target 49% of the time.

For a closer target, cut the height in half and subtract it from the breakout price. That will boost the success rate to 72%.

Wait for confirmation. In a roaring bull market, triple tops are often deceiving. Three price bumps appear, and price does not decline to the confirmation price before soaring. Thus, an important guideline in using triple tops is to wait for price to *close* below the confirmation price.

What is the confirmation price? It's the price of the lowest low between the three peaks. It's also called the breakout price.

Trade the trendline. Draw a trendline connecting the two valleys between the three tops in a triple top. If this trendline slopes upward, a trade signals when price closes below it. This method will often get you in sooner than waiting for price to close below the lowest low. Ignore the method for down-sloping trendlines (because price may never close below the trendline).

Wait for pullback. Pullbacks occur 66% of the time (Table 68.4), so if you miss the original breakout, you can often place your trade during the pullback. Figure 68.6 shows a quick pullback occurring just 2 days after the breakout. Just over a month later (B), investors had another opportunity to add to their positions before the decline resumed.

Stop location. Should the trade go against you, place a stop-loss order 10 or 15 cents above the nearest high. Since the three tops establish a resistance area, price will not hit the stop order until the resistance burns through. Sometimes a fourth peak will appear before price moves down.

Table 68.7 gives the probabilities of a stock rising to various locations during its journey to the ultimate low. If you hold onto the stock past the ultimate low, then ignore the table. It doesn't apply.

Once you have a stop location in mind, then do convert the potential loss into a percentage of the current price to determine how loud you should yell if the stop triggers.

Busted trade. Single busted triple tops in bull markets can lead to huge gains, at least that's what the numbers suggest in Table 68.9. If you want to make money trading triple tops, stick to those which bust in bull markets.

Experience

I couldn't recall ever trading a triple top. It's a bearish pattern, and I have no desire to short a pattern with such poor performance. However, perhaps in the early days of my trading career, I may have been scared out of a long position or two by storm clouds forming a triple top.

Hartford Financial Services Group Inc.

A check of my spreadsheet of trades surprised me. I found two trades, both in the same stock, sold on the same day, but bought at different times. The stock was Hartford Financial Services Group Inc. (HIG) in late 2009, after the bear market ended. I won't go into the two buys except to say that one remark in my trading notebook caught my eye: “Hold this until it hits 60 to 80 or more.” The stock was trading at about $25 a share at the time. Wishful thinking? Was I dreaming?

The stock *did* reach 60 for the first time in 2019, which was 10 years later. That's a long time to hold onto a stock, waiting for it to more than double.

The stock formed a long triple top (6 months wide) and broke out downward from it. From my notebook: “Sell reason: triple top confirmed. On the weekly chart, this has dropped below 2 or 3 peaks since Sept 2009, so it's time to bail out, especially since I am predicting a bear market. It's time to get out of insurance company stocks. This could drop back to 10.”

The market just exited from a bear market in March, and I was predicting a second one. Really? Maybe I meant a bear market in the stock and not the general market.

Anyway, I sold my holdings and took a loss of 4% and 10% on the two trades but collected a few dividends along the way. The stock continued down to 18.81, nowhere near 10, but it bottomed 13% below the breakout price.

The stock climbed back up to the top of the triple top (31.08), and then dropped all the way down to 14.56.

If I'd held on, the loss to 18.81 would have meant a 23% decline. Yes, the stock almost doubled after that with a rise to 31, but you don't

want to build bad habits by discarding your trading plan.

- Lesson: Don't build bad habits by discarding your trading plan. Plan the trade and trade the plan.

Honeywell International

The real surprise from looking at my spreadsheet of trades was that I traded busted triple tops three times. Let me tell you about one I made using Honeywell International (HON) stock in 2007, which I show in **Figure 68.5**.

The triple top is at ABC, which confirmed as a valid triple top at D when price closed below the bottom of the pattern. The stock reversed quickly and closed above the top of the triple top on the price bar to the right of E. I bought the next day and received a fill at 60.09, just above the day's low. I was trying to trade the busted triple top.

The stock moved higher after my buy and that's often a good sign of a successful trade. A diamond top appeared within a week or two, but I didn't notice the pattern until now. Yes, the diamond top looks weird, but that's typical of diamond patterns.

On July 17, I thought I had placed a stop but didn't, so I put a volatility stop at 58.60. The volatility stop takes the stock's volatility into account before telling you where the stop should be located.

On July 26, the Dow industrials dropped 311 points and sucked the stock down with it, snagging my stop-loss order. The stock sold at 58.60, and I lost 3% on the trade.

The stock busted the downward breakout, then busted the upward one and continued to bust the triple top at least 6 times on this chart. In June 2008, the stock finally dropped out of its trading range and plunged, pulled down by the bear market and falling to 23.24, a drop of 60% below my sale price. Thank goodness I sold when I did.

- Lesson: Even busted trades fail.

Sample Trade

Danielle is in charge of the family finances. To boost the return on their savings, she has taken to playing the stock market. Her first few trades were tentative but profitable. That gave her enough courage to undertake the trade featured in **Figure 68.6**.

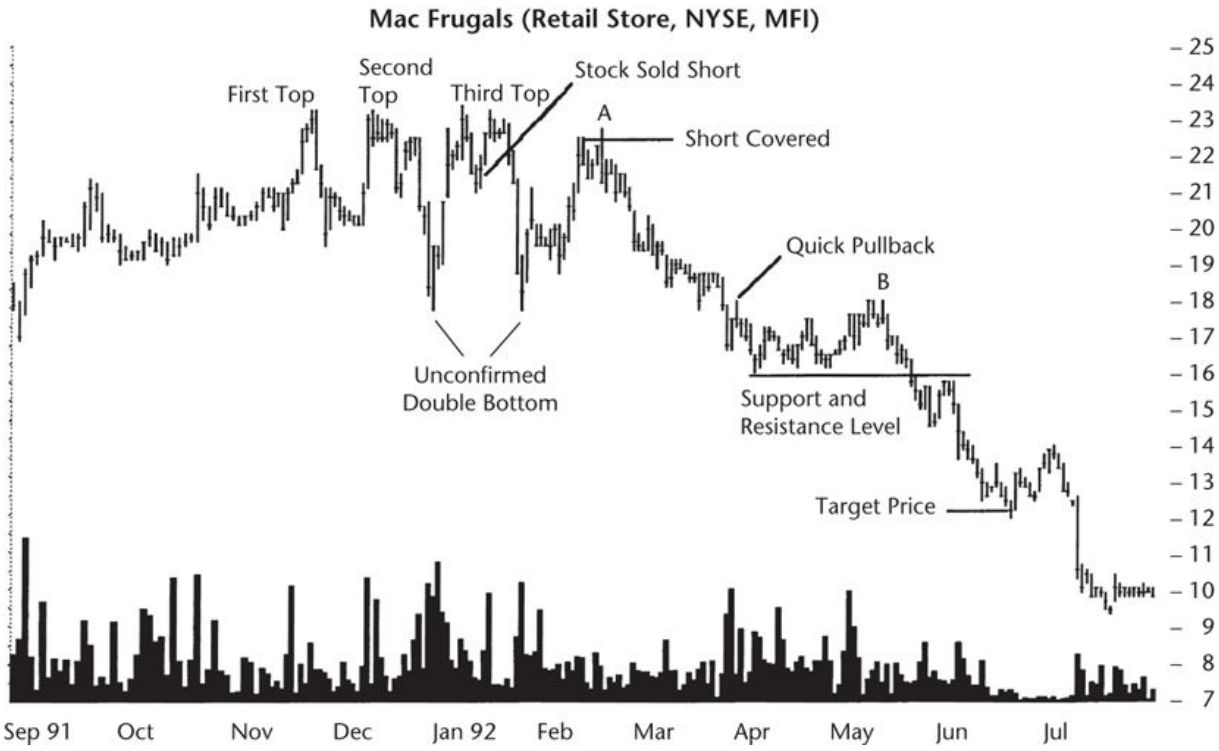


Figure 68.6 Triple top with unconfirmed double bottom. As described in the Sample Trade, Danielle sold this stock before it reached the confirmation point and then panicked at the unconfirmed double bottom. The stock eventually declined 56%. A descending scallop appears between points A and B.

She is a brilliant, anxious, high-energy person who is comfortable taking more risk than most people, so it came as no surprise when she jumped the gun and sold the stock short in early January. She wanted to maximize her gains, and once prices were clearly heading down, she placed the trade and received a fill at 21.50.

"The day after I sold short, the stock turned around and headed back up, making a fourth peak [it's the second peak in the third top]. *Gulp*."

Instead of covering her loss, she decided to hang on. “I got lucky when price flipped around and headed back down.” Seven days later the stock reached the confirmation point of 17.75 but stalled.

“It looked as though the triple top became a multiple top, which developed into an unconfirmed double bottom. Very strange. As price climbed and my gains dwindled, I became a nervous wreck. Clearly shorting wasn't for me. Too much risk. I was wringing my hands. I was pacing the floor. I couldn't sleep. The good news is I lost 5 pounds because I couldn't eat. Of course, my husband isn't talking to me because I was a, *um*, shrew let's say. I did the smart thing and covered my position at 22.25. I suffered a loss of less than a point per share.”

A week or so after she bailed out, the stock was lower and it kept moving down. Eventually, the stock bottomed out at 9.38, comfortably below the predicted price and well below her entry point at 21.50.

Danielle made several mistakes with this trade. First, she did not wait for price to confirm the triple top pattern. Had she waited, she would have seen the false double bottom (it never confirmed as a true double bottom because price did not close above the highest high between the two bottoms).

Second, she was not patient enough for the trade to work out. When a trade goes against you, most times it is wise to quickly close out a position, especially if it is a short sale where losses can be unlimited. In this case, she wasn't in the red by much at any time.

Lastly, though, and it's a big one: She didn't have the experience to even *think* about shorting a stock. She got lucky to only lose a minor amount, especially when she was using family money and not her own personal stash.

69
V-Bottoms

RESULTS SNAPSHOT

Appearance: Looks like a V. Price makes a steep and long drop, then recovers.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bullish reversal	Short-term bullish reversal
Performance rank	24 out of 39	5 out of 20
Breakeven failure rate	19%	14%
Average rise	40%	32%
Volume trend	Upward	Upward
Throwbacks	55%	58%
Percentage meeting price target	52%	42%
See also	V-bottom extended	

In the first edition of this book, I did not include V patterns because I couldn't figure out how to trade them. In this edition, I was able to automate finding these patterns and solve the trading problem. We'll look at identification guidelines shortly.

The above Results Snapshot reveals that the average rise in bull markets isn't exciting (meaning it's low), but this pattern does give traders the opportunity to ride price higher (to match the high on the left side of the V). Unfortunately, even that target is difficult to reach.

However, in bear markets the performance rank places it fifth out of 20 where a rank of 1 is best. So this chart pattern is an exceptionally good player in bear markets. I can imagine bear markets sending price down steeply followed by a snap recovery.

Let's see what a V-bottom pattern looks like.

Tour

Figure 69.1 shows a good example of a V-bottom that works as one would hope. Price starts its steep plunge at A. The drop is extensive on a percentage basis, and price makes its way down to B, where it bottoms. A few days after reaching B, the stock marches upward, posting higher highs and higher lows.

The chart pattern reminds me of mountain climbers who fall into a crevasse. After hitting bottom, they gather their wits and start climbing out (or are pulled out), forming the right side of the pattern. Notice that they don't slip much, meaning there are few or no retraces along the way. The climb out of the crevasse builds the right side of the V, which mirrors the left side. The climbers make it up to D, completing the V-bottom.

Volume trends upward in this example and that's typical. However, the percentages are almost random; 59% show volume trending higher from start to end of the pattern (meaning 41% have receding volume) in bull markets.

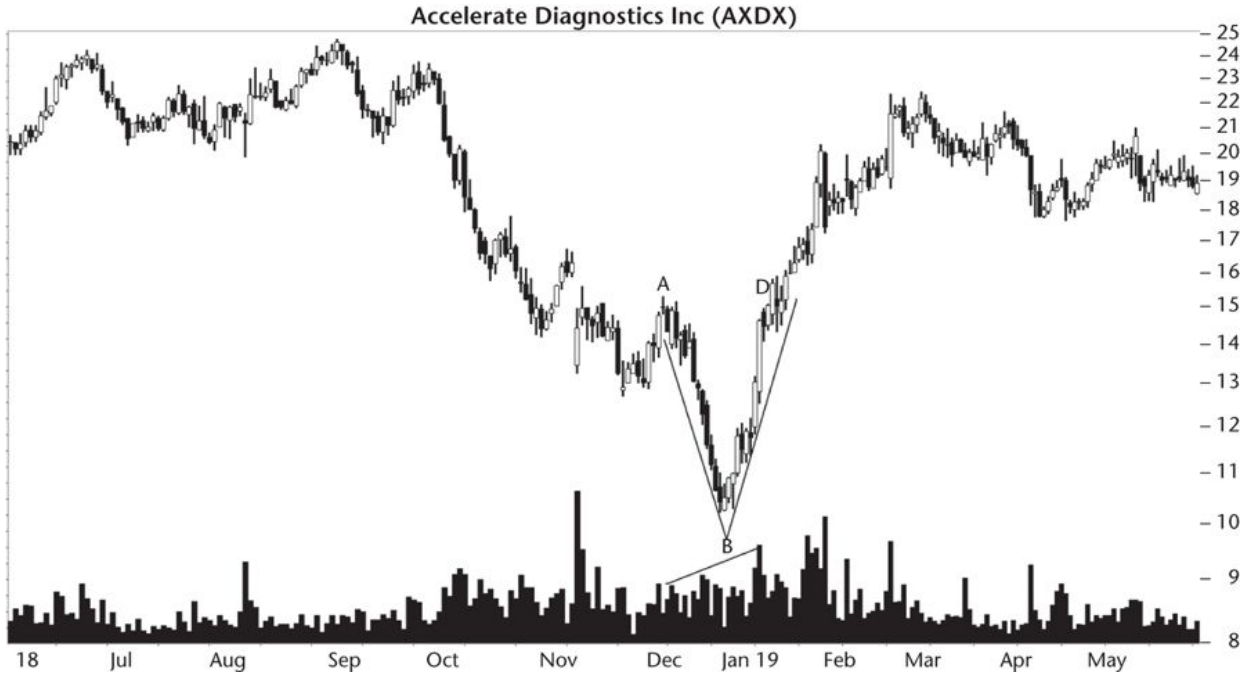


Figure 69.1 This is a good example of a V-bottom that sees price climb.

Identification Guidelines

Table 69.1 shows identification guidelines for the V-bottom pattern, and Figure 69.2 shows two of them, the first is at ABC and the second is at DEF.

Appearance. The chart pattern looks like the letter V. The stock makes an unusually steep drop and turns on a dime to zip back up. If price can't retrace at least 38.2% of the drop from the left-side high to the bottom of the pattern, then it's not a V-bottom. That's an arbitrary number, but it's one I used to find these patterns. Price has to rise far enough that it suggests price will continue rising, and yet still be low enough to make buying the stock attractive.

Plunge. Price makes an unusually steep and quick drop on the left side of the V that must be at least 15%. The average is 30%, so that's the kind of drop we're looking for. The drop should be a straight-line run down (a little bend is fine) with few pauses along the way.

Table 69.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like a V. Price makes a steep and long drop, then recovers.
Plunge	Price drops at least 15%, but the average is higher: 30%.
Volume	Trends upward most of the time.
Breakout direction, confirmation	Upward. A breakout occurs when price recovers at least 38.2% of the move down from the top of the pattern. If price doesn't rise that far, then it's not a valid V-bottom.
Duration	Patterns found are at least 3 weeks to 3 months long.

Figure 69.2 These two V-bottoms appear in a downward trend. The left one fails to see price reach the top of the left side, but the right pattern does better when price reaches G.

Volume. Volume trends upward most of the time (I'll attach numbers to what "most of the time" means later), but the direction is almost random. In the figure, these two V-bottoms have a descending volume trend.

Breakout direction, confirmation. By definition, the breakout is upward, and it occurs when price retraces 38.2% of the drop from A to B or D to E on the chart.

If the stock doesn't recover at least 38.2%, then it's not a V-bottom. You'll see a lot of valid V-bottoms where the right side of the chart pattern never makes it up to the top of the left side.

The ABC pattern is an example of this failure to retrace completely. Price at C falls short of the start, A. The DEF pattern does better. Point F almost makes it up to D, but it takes several more months to reach it at G.

Duration. These patterns are short but plentiful. I limited the duration to a minimum of 3 weeks and a maximum of 3 months. If you see a V-bottom with a duration of less than 3 weeks, then use

your best judgment. You'll find it rare that a V-bottom lasts longer than 2 months. Most are about a month long.

Focus on Failures

Figure 69.3 shows how the V-bottom fails to perform as expected. The start of the V is at A. Price begins a steep descent like an aircraft having a cabin pressurization problem. The drop is a straight-line run down to B with almost no pauses along the way. The stock sees price plunge 30% from A (24.30) to the low at B (18.09). The duration of the pattern is just over a month (from A to C).

Figure 69.3 This V-bottom fails to reach its potential.

After bottoming at B, the stock begins to recover. It climbs on optimism that the quarterly earnings will be exceptional. Instead, the company announces earnings at C that miss expectations, sending the airline crashing into the ground. The recovery to D never materializes, and the pattern fails to fulfill its potential.

This chart is one of the reasons I usually don't buy a stock within three weeks of an earnings announcement. It's too dangerous. (And yes, I *will* hold a stock through an earnings announcement even as I cross my fingers.)

The retrace of the AB drop by the BC rise is 39%, meeting the minimum requirement of 38.2% by a hair. The plunge from A to B is steep (more than 15%) and short; the stock turns at B and heads back

up. The volume trend (E) is upward in this example. All of that means the pattern qualifies as a valid V-bottom even if it didn't work as expected.

Statistics

Table 69.2 shows general statistics for the V-bottom, so let's discuss them. Because the breakout is always upward, there are no downward breakouts to report.

Number found. I found V-bottoms as early as July 1991 and as recent as June 2019, but not all 969 stocks where I found the pattern covered the entire period and some no longer trade.

Reversal (R), continuation (C) occurrence. Most of the V-bottoms will act as reversals of the downward inbound trend (when price breaks out upward, reversing the downtrend). Continuations appear on the chart as a sharp retrace in a rising price trend. Price rises into the start of the chart pattern and leaves it moving upward, too.

Table 69.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,997	1,678
Reversal (R), continuation (C) occurrence	64% R, 36% C	69% R, 31% C
Reversal, continuation performance	38% R, 41% C	32% R, 32% C
Average rise	40%	32%
Standard & Poor's 500 change	8%	5%
Days to ultimate high	74	47
How many change trend?	53%	50%

Reversal/continuation performance. Upward breakouts in bull markets show continuation patterns outperform reversals, but bear market results are split evenly. For the best performance, look for a V-bottom in an upward price trend.

Average rise. As one would expect, the average rise in bull markets beat the performance in bear markets, even though V-bottoms in both

have upward breakouts. This agrees with the old saw, trade with the trend.

As low as the bear market value is, recall that it places fifth in performance when compared to other bear market chart patterns. I measured the average rise from the *breakout price* to the ultimate high (meaning I didn't use the bottom of the V in the measure).

Standard & Poor's 500 change. The performance of the index can't come close to the rise after the breakout from a V-bottom. I used the same holding periods (from breakout to ultimate high) for both the stock and the index.

Days to ultimate high. Price tops out quickly for this pattern. The average is about 10 weeks in bull markets and about 6 weeks in bear markets. Thus, if you time it right, this pattern could be quite profitable for swing traders. It's plentiful and price recovers quickly.

How many change trend? This is a gauge of how many V-bottoms see price rise more than 20% from the breakout. The higher the number, the better because it suggests the move will be high enough to make a tidy profit. Both numbers are above 50%, which is what I like to see.

Table 69.3 shows cumulative failure rates. For example, I found 377 or 19% of V-bottoms failed to see price rise more than 5% (above the breakout) in bull markets. Almost half the patterns will fail to see price rise more than 20% after the breakout.

For this table, the lower the number, the better. You may find it easier to make money on patterns with low failure rates. Just remember that the results are for perfect trades, ones that buy when price hits the 38.2% retrace and sell at the ultimate high. The ultimate high is the highest peak before the uptrend ends. See the Glossary (“Ultimate high”) for details.

Table 69.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	377 or 19%	236 or 14%
10	242 or 31%	234 or 28%
15	168 or 39%	199 or 40%
20	159 or 47%	168 or 50%
25	145 or 55%	138 or 58%
30	109 or 60%	118 or 65%
35	83 or 64%	80 or 70%
50	234 or 76%	199 or 82%
75	197 or 86%	161 or 91%
Over 75	283 or 100%	145 or 100%

Table 69.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% up	100% up
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 41%, M 38%, H 36%	L 33%, M 28%, H 31%
Throwbacks occurrence	55%	58%
Average time to throwback peaks	11% in 7 days	15% in 7 days
Average time to throwback ends	13 days	13 days
Average rise for patterns with throwbacks	35%	28%
Average rise for patterns without throwbacks	45%	37%
Percentage price resumes trend	53%	41%
Performance with breakout day gap	45%	31%
Performance without breakout day gap	38%	35%
Average gap size	$0.58	$0.53

Table 69.4 shows breakout and post-breakout statistics.

Breakout direction. By definition, the breakout direction from a V-bottom is upward. If it doesn't have an upward breakout, then it's not a V-bottom. The breakout occurs when price retraces at least 38.2% of the drop from the top of the pattern to the bottom of the V.

Yearly position, performance. I sorted the breakout price into where it occurs in the yearly high–low price range, then mapped performance on top of it. For both bull and bear markets, the best performing V-bottoms have the breakout price within a third of the yearly low.

Bull markets have the worst performance if the breakout is near the yearly high. Bear market V-bottoms hate the middle third of the price range.

Throwbacks. Throwbacks should be rare in this chart pattern if the V-bottom worked as we hoped. That is, price should not pause on the recovery back up to the top of the pattern. However, we do see a pause about half the time when a throwback occurs.

Price climbs a substantial amount for a throwback, between 11% and 15% in a week (a typical move in other chart pattern types is about 8%) before returning to the breakout price in 13 days (which is longer than normal by a day or two).

As you might expect, V-bottoms without throwbacks outperform those that have them. That's no surprise because other patterns behave the same way. The results suggest that throwbacks (and pullbacks for that matter) are not statistical glitches.

Because the rise is hefty, 11% to 15%, you may wish to swing trade the throwback. Buy into the stock by setting a buy stop at the 38.2% retrace value and sell when the stock rises 10%. The median rise is 9%, by the way (bull market).

Gaps. Breakout day gaps push the stock upward in bull markets, but retard performance in bear markets. Because I set the breakout at an arbitrary value (38.2% retrace of the downward plunge on the left side of the pattern), I don't place much value in gaps for this pattern.

Table 69.5 shows performance sorted by height and width.

Height. Tall patterns outperform in both market conditions (bull, bear). The differences are startling. Choose a tall pattern in bull markets and you stand to make almost double what a short pattern will bring. That's if you trade it perfectly and often enough; even so, it's a huge difference. You can compute what the breakout price will be. Divide the pattern's height by the breakout price. If the result is higher than the median shown in the table, then you have a tall pattern. However, just because your pattern is tall is no guarantee that it'll outperform, so keep that in mind.

Width. In many types of chart patterns, wide patterns outperform short ones. Unfortunately, you won't know when the pattern will end, so you won't know ahead of time if the pattern is wide or narrow. However, if the move from the top of the pattern (the start) to the breakout is longer than the median width listed in the table, then you have a wide pattern. That's how I measured width (from pattern top to breakout).

Table 69.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	50%	39%
Short pattern performance	29%	25%
Median height as a percentage of breakout price	34.0%	41.3%
Narrow pattern performance	36%	28%
Wide pattern performance	43%	37%
Median width	28 days	26 days
Short and narrow performance	29%	22%
Short and wide performance	29%	28%
Tall and wide performance	55%	46%
Tall and narrow performance	45%	33%

Height and width combinations. Because we know that tall patterns outperform and wide patterns outperform, we'd expect the combination of tall and wide to show the best performance. Indeed, it

does. Short and narrow patterns (the opposite of tall and wide) have the worst performance. That's gratifying when the numbers work and make sense (or cents!).

Table 69.6 shows volume-related statistics.

Volume trend. I used linear regression on volume to find the slope of a "best fit" line through the volume bars. Just over half the time, volume sloped upward from start of the pattern to the end (breakout).

Rising/Falling volume. When volume increased from the start of the pattern to the end, we find better performance. Maybe that's a sign of enthusiasm. It suggests volume is higher after price bottoms than before (not always, of course. You could have one day with huge volume skewing the numbers). If lots of people are trading the stock as price rises, it often translates into better performance.

Breakout day volume. Because I arbitrarily chose the 38.2% retrace value as the "breakout," I'm not sure how important large breakout day volume is. Even so, heavy volume on the day of breakout suggests mildly better performance (bear markets show a wider spread, though).

Table 69.7 is supposed to show statistics related to stop-loss order location. I don't include it because my computer couldn't make sense of the pattern.

Table 69.8 This table shows how the pattern has performed over the last three decades.

Table 69.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	59% up	58% up
Rising volume trend performance	42%	35%
Falling volume trend performance	36%	27%
Heavy breakout volume performance	41%	35%
Light breakout volume performance	38%	29%

Table 69.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	44%
2000s	41%
2010s	33%
Performance (above), Failures (below)	
1990s	17%
2000s	18%
2010s	22%

Performance over time. The 1990s showed the best performance, and the 2010s had the worst performance. Performance has dropped steadily, which I find interesting.

Failures over time. Failures are a count of how often price fails to rise more than 5% after an upward breakout. I excluded the two bear markets in the 2000s.

The 1990s had the lowest failure rates and the 2010s had the highest, showing an increasing trend to fail.

Table 69.9 shows how busted patterns perform.

Busted patterns count. A lot of patterns bust, and the V-bottom is no exception. Over a quarter of them will see price rise less than 10% after the breakout, head down, and close below the bottom of the pattern, busting the upward breakout.

Busted occurrence. A single busted pattern would send price lower after an upward breakout. Indeed, we see most of the busts are single ones. That's especially true in bear markets where 90% of the patterns that bust are single busts. For a double or triple+ (more than two) bust, price has to cross from the bottom of the pattern to above the top. That's a long hike, so double and triple+ busts are rare.

Busted and non-busted performance. Because we're dealing with a pattern that has an upward breakout, a busted pattern would send price lower. That's why you see negatives in the table. It measures the drop from the bottom of the pattern to the ultimate low. Single busted patterns outperform the single, double, and triple+

busts (all busted patterns), as one might expect. I also include the drop from a V-top, which is the closest pattern to a V-bottom except it has a downward breakout. The results compare busted patterns with a normal drop from a V-top.

Table 69.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	592 or 30%	435 or 26%
Single bust count	440 or 74%	392 or 90%
Double bust count	130 or 22%	35 or 8%
Triple+ bust count	22 or 4%	8 or 2%
Performance for all busted patterns	–18%	–22%
Single busted performance	–22%	–24%
Non-busted performance (V-tops)	–15%	–24%

Trading Tactics

Table 69.10 shows trading tactics.

Measure rule, targets. I set the left top of the V-bottom as the target. The bottom portion of the table shows that about half of the patterns see price rise to match the start. If you page back to Figure 69.1, I'm talking about the rise at D meeting or exceeding the price of A, which it does.

Figure 69.2, pattern DEF, shows a V-bottom, but this one reaches the measure rule target at G. Pattern ABC on the same chart does not meet the target (price fails to climb up to the price of A).

Bull markets do slightly better than bear markets in reaching the target.

I also include other benchmark points to help indicate how well price rises during a V-bottom. For example, in bull markets, 85% of the patterns will retrace half the drop from the top of the pattern. Slightly less, 70%, will climb to the 66% retrace value. Finally, if you compute the height of the left side of the V-bottom, then take half of it and add it to the top of the V (at the start) for a target, we find that 27% see price climb that far.

When you know what your target will be, take the difference between the distance to the target and the current price. Divide by the current price and compare the result with Table 69.3.

For example, if the target means a rise of $5 above the breakout price of $50, that's a 10% move. Table 69.3 says that in bull markets, 31% of V-bottoms will fail to see price rise more than 10%. That also means 69% will see price exceed the target (but you could still lose money by botching the trade).

Buy location. Squiggles on a chart become a V-bottom when price retraces at least 38.2% of the way up from the bottom of the pattern. Thus, you can compute where the breakout will be and place a buy stop there.

Table 69.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The price at the start (left top) of the V-bottom is the measure rule target. The bottom portion of the table shows how often price reaches the target.
Buy location	With this pattern, you know that the breakout price will be 38.2% of the height of the left side of the V, added to the bottom of the V.
Quick trade	Price can recover quickly in a V-bottom, making for a fast profit.

Description	Bull Market	Bear Market
Percentage reaching midway up left side	85%	85%
Percentage reaching 2/3 up left side	70%	69%
Percentage reaching left side top	52%	42%
Percentage reaching 1.5× height	27%	15%

Quick trade. I mentioned this earlier in Table 69.2, "Days to ultimate high." Because of the sharp rise (or the hope of a sharp rise) after the pattern bottoms, the V-bottom presents an opportunity for swing traders to make a quick buck.

Buy at the breakout and sell at the top of the pattern. If price closes below the bottom of the V, sell. You may even wish to place a stop just below the buy price. If you're lucky, you can ride price to the top of the pattern and perhaps higher.

Experience

The chapter on cloudbank patterns discussed a trade in Northwest Pipe Co. (NPWX). This is the second buy of that trade, bringing me up to a full position. I bought at different times, for different reasons, but sold at the same time. Let's discuss this trade.

When I'm adding to an existing position, as I did in this trade, my notebook only contains a few notes for the entry instead of a long checklist. The idea is that I already know about the stock because I already own it.

Here's what I wrote about the buy: “2 November 2016. I am going to buy at market open tomorrow to give me a full position [after combining with the other trade]. The weekly chart shows a V-type rebound, and we are near the bottom of that V, so it's a good time to buy. Yes, I expect this to retrace in the next 10 days as many good quarterly reports do, but if not, I don't want to be left on the sidelines. Plus, I'm flush with cash. Target 22 to 25.”

Figure 69.4 (note: weekly scale) shows the big decline from A to B, a breathtaking drop of 82%. That's the left side of the V-bottom.

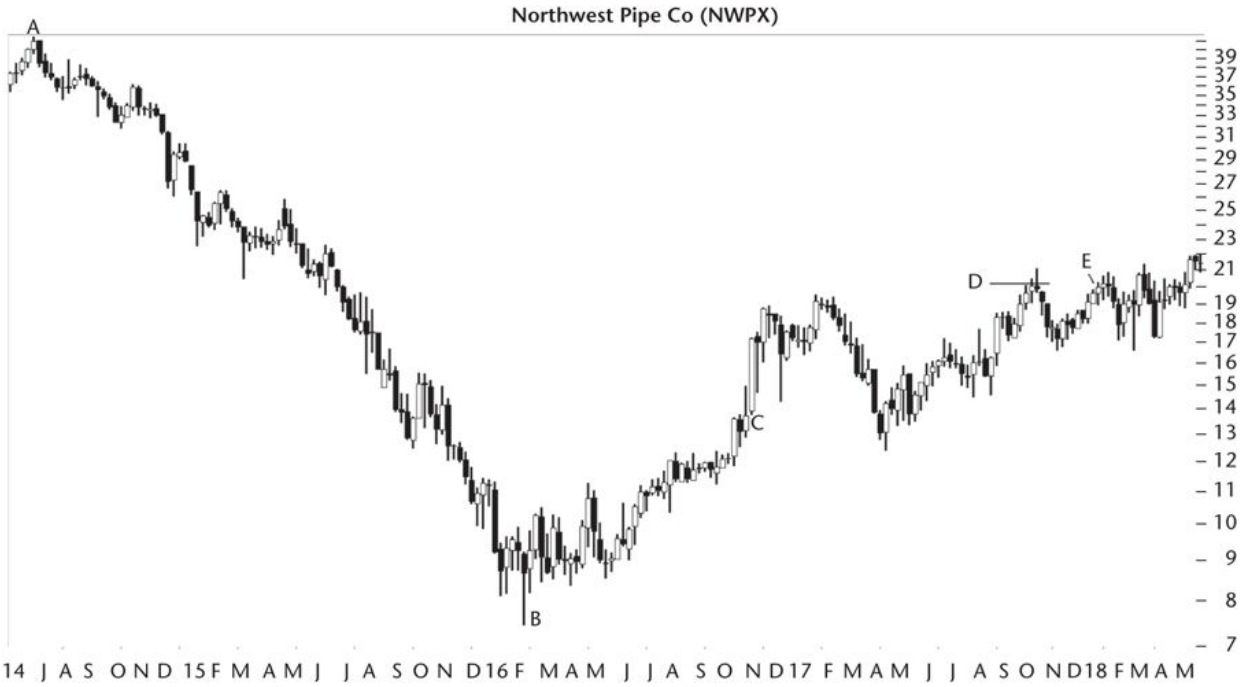


Figure 69.4 A V-bottom trade made 35%, shown on the weekly scale.

Two days before I bought the stock, the company announced earnings. I bought at C. Combined with news of a new pipe contract within the past month, the stock moved higher on the combined events.

Had I waited for the 38.2% retrace of the move down from A to B, that would have meant an entry at D. The price scale is logarithmic, so keep that in mind. Every trade is different, so I bought into the stock well before the traditional confirmation signal, and yet it was well off the bottom price of 7.46.

The stock made its way higher to almost 20 and then retraced back to just below my buy price in April, but I hung in there.

If you look at the chart of the stock going back to November 2010, you'll see a cloudbank pattern starting then and lasting for 2 years. That cloudbank provided the exit signal with a cloud base of 20.

For the sale, which I show as E, I wrote this in my notebook: “9 January 2018. S&P says strong sell as of 3 January 2018. Everything is negative: value, quality, growth, financial health, price momentum. Other analysts are red [bearish], too. Dump this? Insiders are holding onto shares, though. Cloudbank is at 20, so [the stock is] right there, at the base.

“Sell reason: This didn't go anywhere this past year, but what scares the willy out of me is the negative analyst view. So I'm going to let it all go. Sell reason: Hit cloudbank base.”

On this trade I made 35%.

- Lesson: I was late buying into the trade, both in time and price. The turn at bottoms is often V-shaped, whereas peaks are more rounded-looking. Try to improve the entry.

The stock continued higher, in large up-and-down swings, eventually reaching 36.70 in February 2020 (which was above the 22 to 25 target of this trade).

Sample Trade

Figure 69.5 shows a trade Dave made in the stock. I have the V-bottom starting its decline from point A as the chart shows (but the V might really start at D. Your choice).

Price paused once at D before resuming a steep and fast drop to B. The height of the V-bottom is A–B or 114.55 – 89.05 or 25.50.

If Dave were to buy the stock at the bottom, he could make $25 a share in about a month, providing the stock recovered as fast as it dropped. That's rare. We've seen in this book that price drops twice as fast as a rises, so a good hold time would be 2 months. Of course, to make that kind of gain ($25.50), he'd have to buy at the exact bottom and not wait for price to climb back to the breakout.

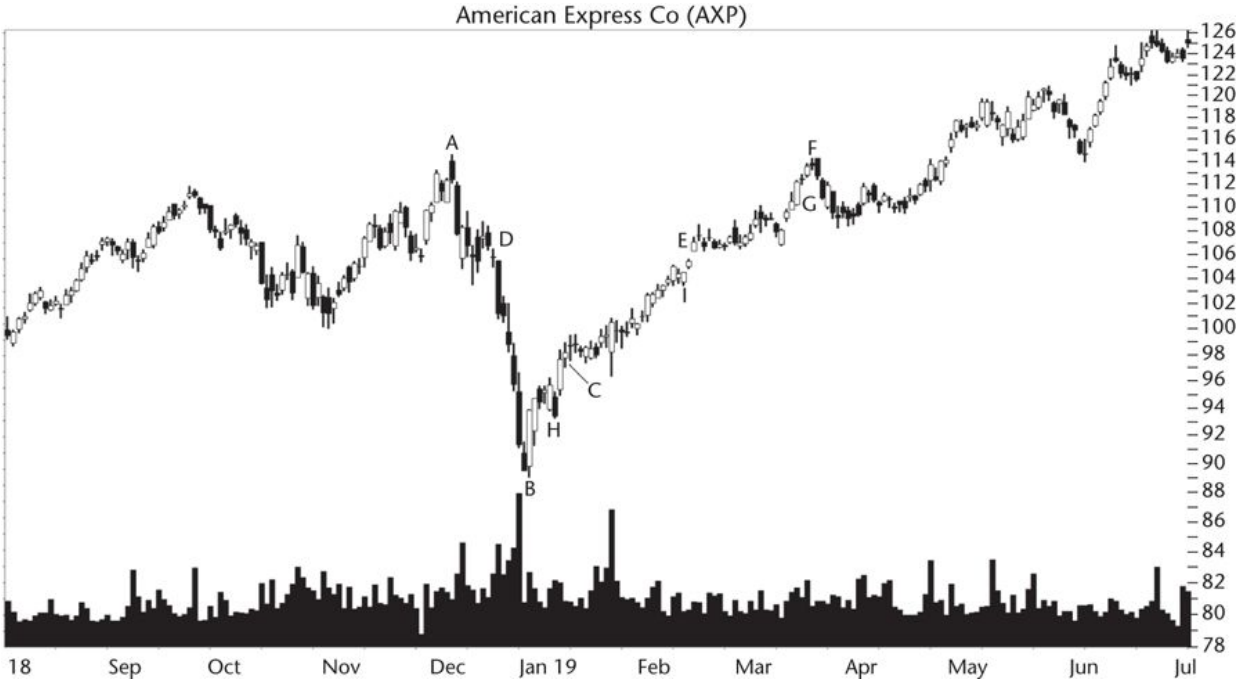


Figure 69.5 Dave bought this stock at the breakout and rode price higher.

The calculated breakout price would be 38.2% of 25.50 added to the low at 89.05 for a price of 98.79. Price crossed that threshold at C.

“I'm a swing trader willing to take a risk, so that's where I put my buy stop. I bought at 98.79. What was my target? The top of the pattern at 114.55. For a stop, I placed it at 93.13 [below H], about a dime below the minor low.”

Price moved sideways for a week, which worried him. If the pattern behaved like it should, the vertical move would continue. Instead it took a week for the bulls to regroup and overpower the selling pressure of the bears to force price higher.

“When the stock climbed to E, I expected the stock to pause there.” Why? “Because of resistance already shown at that price by the sideways move [at D].” He took that opportunity to raise his stop to I, to 103.33, or 10 cents below the minor low there.

Price moved sideways for about 2 weeks before making a dash up to F. Here's where it gets tricky. The stock took longer than he hoped, or expected, to reach as high as it did (it should have hit the price of A by 26 February if price climbed half as fast as it dropped).

The stock at F was at 114.25, or slightly below the price of A (114.55). If the stock continued higher, he'd sell automatically at the target. But he also knew there might be overhead resistance lurking to stop the advance.

When price closed lower the next day, “I figured the advance was done and sold the stock at the opening the next day, at 112.26.” He made $13.47 per share for a hold time of about 2.5 months.

As the chart shows, the stock retraced for a few more days before resuming the upward trend. It found the ultimate high in late January 2020.

70
V-Bottoms, Extended

RESULTS SNAPSHOT

Appearance: A V-shaped pattern with the right side seeing price retrace for a time.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Short-term bullish reversal
Performance rank	24 out of 39	3 out of 20
Breakeven failure rate	10%	7%
Average rise	40%	33%
Volume trend	Downward	Downward
Throwbacks	62%	73%
Percentage meeting price target	51%	36%
See also	V-bottom, ugly double bottom	

The V-bottom is an unusual creature, but in the extended version, we add a handle to the pattern, which makes finding a trading entry easier. A *handle* is the best way to describe the extension. Price forms a V, rises up, and moves sideways to down in the extension. You can

think of the extension as a flag that appears in an uptrend. I'll show a chart of the pattern in a moment.

The above Results Snapshot shows a pattern with a low failure rate but also a low average rise in bull markets (ranking 24 where 1 is best). Bear markets do much better, ranking third because of the 33% average rise.

Price reaches the measure rule target between a third and half the time, which is disappointing. A half-height target works better. We'll discuss that in the Trading Tactics portion of this chapter. Let's take a tour of this pattern.

Tour

Figure 70.1 shows what a typical example of an extended V-bottom pattern looks like (from A to C). The top of the V begins at A, although you might wish to include the drop from the September high (which would make the pattern look too tall, I think). Price plunges in a straight-line run down to the bottom of the V, near B.

Price recovers (following trendline B) in a straight-line run that mirrors the angle of the AB drop. Then something happens to swat the bulls into submission. Price moves sideways (in this example), forming a ledge, shelf, or handle, at C (pick your favorite adjective, or just call it the extension). This sideways move is the ideal pattern, where the extension is horizontal, but it need not be. Oftentimes you'll see price trend downward (in the extension), but rarely will it trend upward. In this case, the horizontal move at C looks like a diamond top, or perhaps an inverted roof would be a better match. The extended V-bottom pattern ends on the right side of the extension.

Volume trends downward (D) in this example and that's typical for the extended V-bottom.

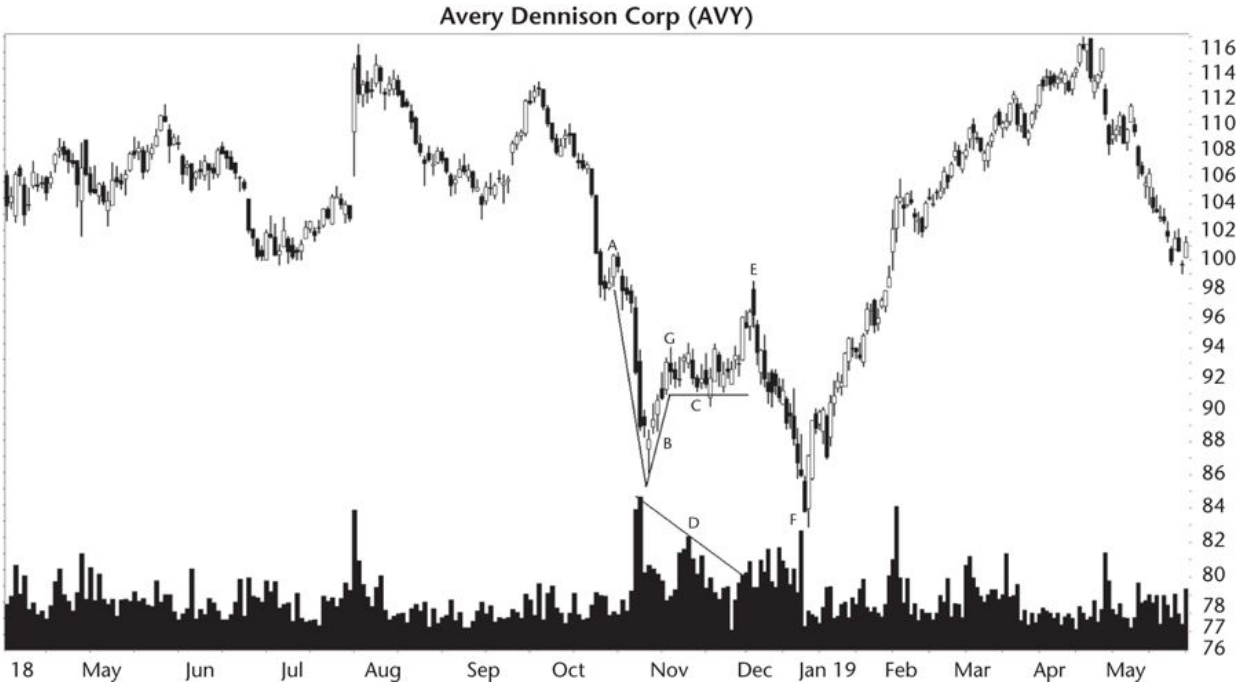


Figure 70.1 This is what an ideal extended V-bottom (ABC) looks like.

After the extension completes, price resumes its upward move, rising to E. An upward breakout happens when price rises above the top of the high at G (the top of the short uptrend leading to the extension).

Price completes a throwback to the breakout price but continues lower to F in this example. That decline is not what you like to see after an extended V-bottom, though.

Identification Guidelines

Table 70.1 shows identification guidelines for the extended V-bottom. Refer to Figure 70.2 for additional flavor.

Appearance. The extended V-bottom begins with the swift, straight-line drop at A. Price bottoms at B and retraces a portion of the drop, forming the bottom and right side of the V (F or C). Price moves diagonally higher in the extension at D with a drop at E, marking the end of the extension. After that, price meanders higher.

I show this extended V-bottom for one reason, the quick drop at E. Before I describe that, let me say that this is not an ideal extended V-bottom. Price rises to F and that looks like the mirror of the drop from A to B, but a lot shorter, of course. After that, a small extension forms from F to C, which is what you're looking for. If you want to conclude that line C marks the end of the extension, that's fine. But I wanted to discuss the drop at E and chose this flawed example of an extended V-bottom.

Table 70.1 Identification Guidelines

Characteristic	Discussion
Appearance	A straight-line run down (or nearly so) on the left side of the V followed by an upward retrace that sees price recover some but not all of the prior drop. Price moves sideways to down in the extension before resuming an upward move.
Plunge	From the top of the V to the bottom, price drops at least 15%, but the average is higher: 29%.
Extension	After price retraces a portion of the left-side drop (of the V), price moves horizontally to down, forming the extension. It does not drop far enough to form a second bottom. Rather, price pauses for a time in its upward move before resuming the uptrend. The median extension is 14 days long.
Volume	Trends downward from the start of the V to the day before the breakout (extension end).
Breakout, confirmation	A breakout occurs when price closes above the right side of the V, before the extension. The breakout is upward most of the time. You may wish to wait for price to close above the top of extension. The breakout confirms the pattern.
Duration	3 weeks to 3 months.

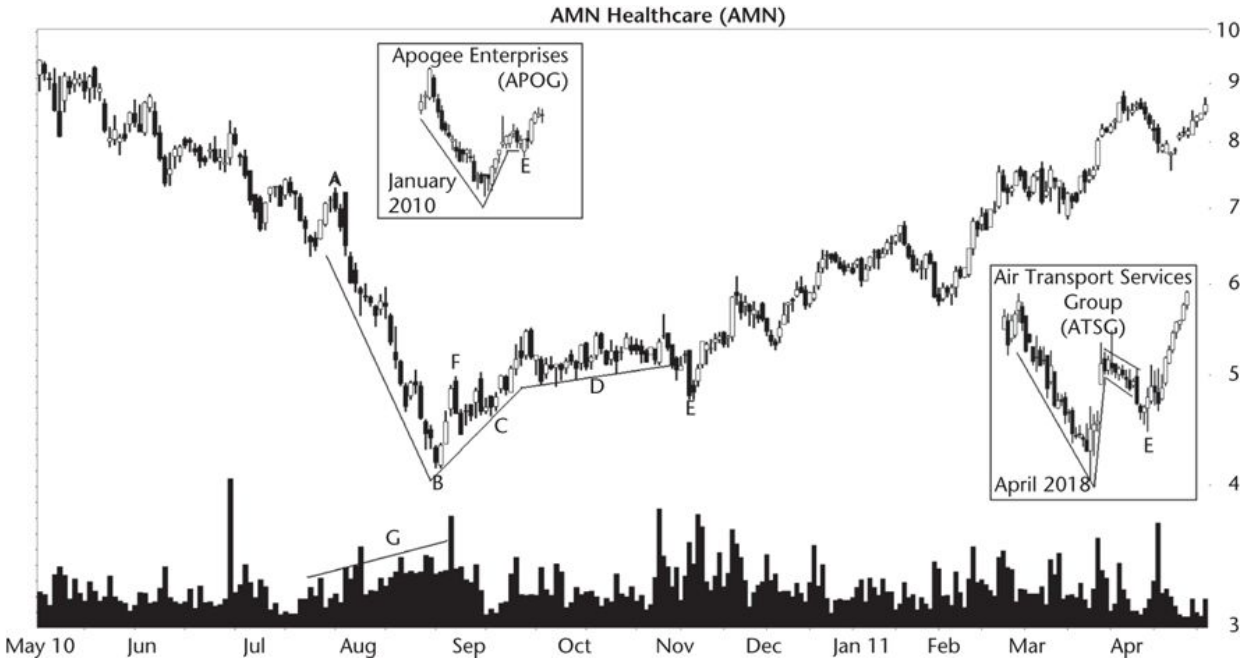


Figure 70.2 This extended V-bottom has a minor drop before the pattern completes. The two insets show variations.

I see that short drop at E frequently (about 25% of the time) in extended V-bottoms. In this example, the bottom of the extension is diagonal (D), but we see an E-type plunge in horizontal (APOG inset) and even down-sloping (ATSG inset) handles.

Plunge. I set a minimum drop of 15% on the left side of the V (from A to B). However, the drop is usually more extensive than that, averaging 29%.

Extension. The extension of the V sees price move horizontally to down. If the stock drops during construction of the extension, it should not fall far enough to make a second bottom (as in a double bottom). In the best-looking extended V-bottoms the extension will be horizontal, and that's more common than you might think (but it's not like you'll see it in the grocery aisles).

Often you'll see a short downward retrace of the move up from the bottom of the V. In other words, the extension will tilt downward. We see that in inset ATSG.

Volume. Volume trends downward 68% of the time from the start of the V (A) to the end of the extension (C). Often you'll see low volume at the start. As price approaches the bottom of the V, volume typically

increases, being highest at the bottom, but then recedes as price rises to the start of the extension. G shows an example of rising volume.

Breakout, confirmation. To make things easy, I set the breakout to be a close above the high at the right side of the V, before the extension begins. You may wish to use a close above the high set in the extension.

The pattern confirms when price breaks out upward. A downward breakout invalidates the pattern. Downward breakouts are rare, happening 11% to 12% of the time when you use the breakout location as I just described.

Duration. I set a minimum duration of 3 weeks to make sure price dropped in a steep move down, but not accompanied by a large one-day price gap. I set a maximum of 3 months because I wanted the right side of the V to mirror the angle of the left side. These values are arbitrary.

Focus on Failures

As I mentioned, a downward breakout invalidates an extended V-bottom. A downward breakout happens when price drops far enough to close below the bottom of the V instead of first breaking out upward. A downward breakout would represent one type of extended V-bottom failure.

Figure 70.3 shows a different kind of failure, a 5% failure. A 5% failure occurs when price does not rise far enough above the breakout price before turning down and closing below the bottom of the pattern or dropping more than 20%.

In this example, the extended V-bottom is the move from A to D. Price drops in a straight-line run from A to B. At B, the downtrend reverses and price climbs but only to C. After C, the extension forms and price travels sideways to D.

Because I set the breakout price when the stock *closes* above the high price at C, the breakout occurs at D, in the middle of the extension (in this example). Price meanders higher until reaching the ultimate high at E. Point E is less than 5% above the high at C. When price drops to F (bottom of the chart), the pattern's fate is sealed as a 5% failure.

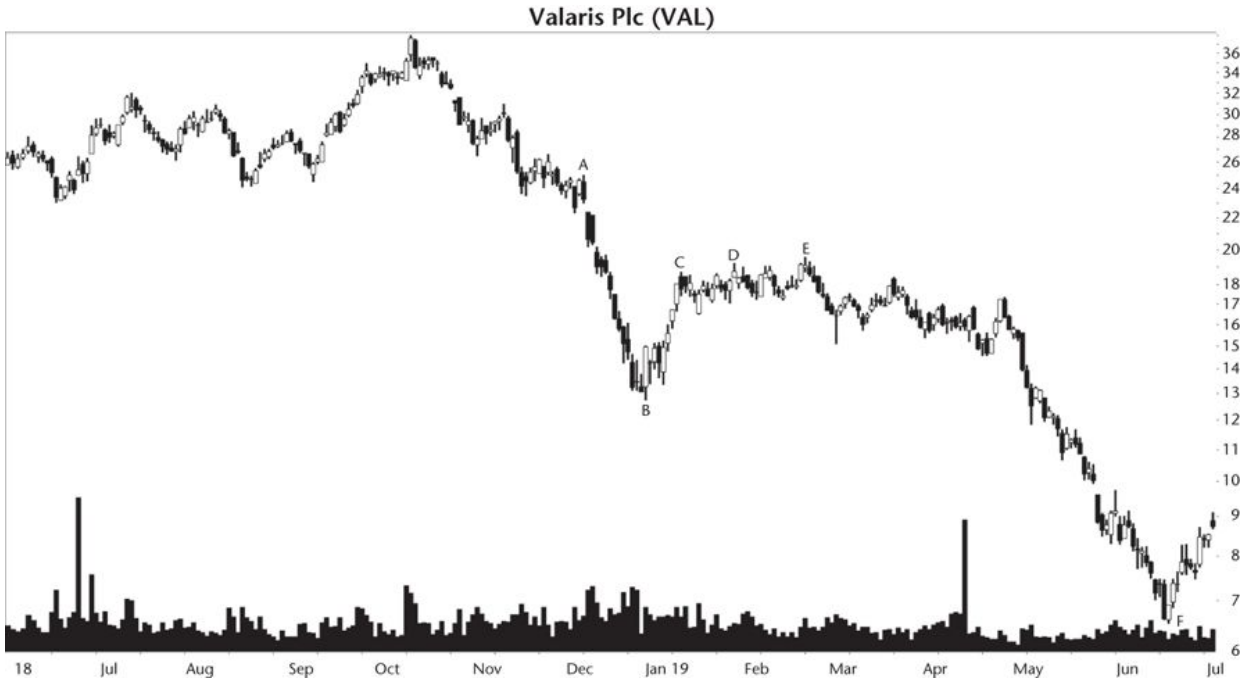


Figure 70.3 This extended V-bottom doesn't see price rise much after the upward breakout at D.

These types of failures are rare, happening between 7% (bear market) and 10% (bull market) of the time. That failure rate is rare until you find one grabbing onto your trade and holding on like a pit bull.

Statistics

Table 70.2 shows general statistics.

Number found. Even though I automated finding some of these patterns, I didn't find many: 479, but that includes downward breakouts. There were too few of those, so I limited the presentation to upward breakouts in bull and bear markets. I found patterns in data from August 1991 to October 2019, but not all stocks covered the entire period, and some no longer trade.

Reversal (R), continuation (C) occurrence. Most of the patterns acted as reversals. Because the breakout is upward for this pattern, the inbound price trend must be downward to make the pattern act as a reversal. The inbound downtrend does not include the left side of the V.

Reversal/continuation performance. The performance difference between reversals and continuations is a close tie, really. The performance differences are probably not statistically significant.

Average rise. The bull market average rise is above that shown by the bear market results. No surprise there. Compared to other bullish chart patterns, however, the bull market results are weak, but the bear market ones are strong.

Standard & Poor's 500 change. The performance of the index can't match the performance of the extended V-bottom, despite buying the index on the breakout day and selling on the day of the ultimate high (both dates are for the extended V-bottom). In other words, I checked the move in the S&P for the same hold time as if trading the extended V-bottom.

Table 70.2 General Statistics

Description	Bull Market	Bear Market
Number found	288	135
Reversal (R), continuation (C) occurrence	71% R, 29% C	76% R, 24% C
Reversal, continuation performance	40% R, 38% C	33% R, 34% C
Average rise	40%	33%
Standard & Poor's 500 change	12%	2%
Days to ultimate high	199	70
How many change trend?	53%	61%

My guess is that the general market helped the performance of the pattern, giving the bull market results a boost and the bear market results more of a nudge.

Days to ultimate high. It takes over six months for price to rise 40% in bull markets but considerably shorter to rise 33% in bear markets. Crunching the numbers, the results say that bear markets see price rise twice as fast as do bull markets.

I don't know why that is except to say that maybe a bear market is like pulling on a spring. An upward breakout forces the spring to release and price shoots upward. Maybe in a bear market, if price is rising, it must have a good reason for doing so, hence the greater velocity.

In other types of chart patterns, we've seen bear markets have a higher speed for both up and down breakout directions, often twice as fast. The velocity is not faster than a speeding bullet, nor can it leap tall buildings, but the difference between bull and bear markets is interesting.

How many change trend? I included this gauge to help determine if price rises far enough after the breakout. Patterns in bear markets do well, but the bull market is light on performance. Still, having half of the patterns see price rise more than 20% is a good thing.

Table 70.3 shows failure rates. For example, in bull markets 30 extended V-bottoms, or 10%, failed to see price rise more than 5% after an upward breakout. Another 44, for a total of 74 or 26% of all extended V-bottoms I looked at, failed to rise more than 10% after the breakout.

Table 70.3 Cumulative Failure Rates

Maximum Price Rise (%)	Bull Market	Bear Market
5 (breakeven)	30 or 10%	10 or 7%
10	44 or 26%	18 or 21%
15	32 or 37%	13 or 30%
20	28 or 47%	12 or 39%
25	24 or 55%	12 or 48%
30	18 or 61%	15 or 59%
35	7 or 64%	16 or 71%
50	27 or 73%	12 or 80%
75	37 or 86%	17 or 93%
Over 75	41 or 100%	10 or 100%

Another example: Almost half the patterns (47%) failed to see price rise more than 20%. That's in bull markets. Bear markets have lower failure rates.

Table 70.4 shows breakout-related statistics.

Breakout direction. As I mentioned, not all of the patterns I catalogued broke out upward. Some had downward breakouts, but they were too few to include in the tables.

Extension length. In Figure 70.3, the length of the extension is the move from C (the end of the uptrend on the right side of the V) to the breakout (D).

Yearly position, performance. I sorted the breakout price into where it fits in the yearly price range and mapped performance accordingly. The best performance occurs when the breakout is within a third of the yearly low for both bull and bear markets. This pattern works well for traders who like to bottom fish (buy near the

yearly low, sell higher), but it doesn't work as well for momentum players (buy high, sell higher). I found that out the hard way (see Experience).

Throwback. A throwback happens more than half the time, but it's slower to unfold than usual. The round-trip for other chart pattern types is about 11 days. The extended V-bottom takes almost two weeks for the stock to return to the breakout price. By definition, a throwback must happen within a month.

The results suggest that you can make money if you're a nimble trader. Place a buy stop a penny above the breakout price and sell about a week later. On average, you could capture 9% to 14% if you trade it often enough and perfectly.

Table 70.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	88% up	89% up
Extension length	18 days	15 days
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 41%, M 39%, H 37%	L 35%, M 29%, H 29%
Throwbacks occurrence	62%	73%
Average time to throwback peaks	9% in 7 days	14% in 7 days
Average time to throwback ends	13 days	13 days
Average rise for patterns with throwbacks	36%	29%
Average rise for patterns without throwbacks	45%	45%
Percentage price resumes trend	65%	46%
Performance with breakout day gap	44%	33%
Performance without breakout day gap	38%	34%
Average gap size	$0.53	$0.51

We've seen with many other chart pattern types that a throwback hurts performance, and that's true with extended V-bottoms, too. I think it's because upward momentum is depleted during a throwback compared to those patterns that don't have a throwback.

Whatever the reason, look for nearby overhead resistance and try to pick patterns where there is little to none. Good luck with that (meaning it's not easy to find such a situation and price may throw back regardless).

After a throwback completes in bull markets, most of the time (65%) price will resume its upward march. You just have to remain in the trade long enough to participate in the rise (or consider buying after a throwback completes).

Gaps. A breakout day gap helps propel the stock upward in bull markets, according to the statistics, and quite handily, too. Because I measured performance using the opening price the day *after* a gap appears, you can participate in the better performance by buying after the gap appears.

Table 70.5 shows size statistics.

Height. Many types of chart patterns show that tall patterns outperform short ones, and that's true for the extended V-bottom.

Width. Wide patterns perform better than narrow ones, but the differences are tiny. It's interesting that the numbers are mirrors of what the height shows (41% versus 38% and 38% versus 41% or 34% versus 33% and 33% versus 34%). That observation doesn't have any significance except that it's cool (I might be alone in this feeling).

Height and width combinations. Because of the dearth of samples, I don't put a lot of faith in the performance of combinations. In bull markets, anything except patterns that are both short and narrow work best. In bear markets, the best performance comes from patterns tall and wide.

Table 70.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	41%	34%
Short pattern performance	38%	33%
Median height as a percentage of breakout price	32.6%	48.3%
Narrow pattern performance	38%	33%
Wide pattern performance	41%	34%
Median width	44 days	41 days
Short and narrow performance	36%	36%
Short and wide performance	41%	29%
Tall and wide performance	41%	39%
Tall and narrow performance	41%	28%

Table 70.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	68% down	68% down
Rising volume trend performance	44%	32%
Falling volume trend performance	37%	34%
Heavy breakout volume performance	41%	33%
Light breakout volume performance	39%	34%

In **Table 70.6** I measured volume in this pattern from the start of the V to the end of the extension (the day before an upward breakout).

Volume trend. Volume trends downward most of the time, as the table shows.

Rising/Falling volume. In bull markets, patterns with a rising volume trend work best. In bear markets, falling volume works better for extended V-bottoms.

Breakout day volume. Heavy breakout day volume propels the stock upward but only in bull markets. The performance difference

for both bull and bear market numbers is small (one or two percentage points).

Table 70.7, showing how often stops hit, doesn't appear because my computer can't measure the stop location for this chart pattern accurately.

Table 70.8 shows performance and failure rates over three decades.

Performance over time. The 2000s were the decade of best performance, and the worst was the 1990s. I'm at a loss to understand the wide swings in returns except to say that it might be due to few samples.

Failures over time. Failures, oddly, have been climbing over the last three decades. Usually, failures track performance (the better the performance the fewer the failures). Failures are a count of how many patterns fail to see price rise more than 5% after the breakout.

Table 70.8 Performance and Failures Over Time for Bull Markets

Description	**Bull Market**
1990s	32%
2000s	47%
2010s	38%
Performance (above), Failures (below)	
1990s	7%
2000s	8%
2010s	13%

Don't look for **Table 70.9**, because you won't find it. I didn't test for busted patterns because the sample count was too low.

Trading Tactics

Table 70.10 shows trading tactics for extended V-bottoms.

Measure rule, targets. The full-height target for the measure rule is the start of the V-top on the left. The lower portion of the table shows how often price rises to reach the target. Using the top of the V as the target, price reaches it 51% of the time in bull markets but only about a third of the time in bear markets.

If you use half the height, the target is much closer and easier to reach before price changes trend. To use this, measure the height from the top of the V to the bottom, then take half of it. Add the result to the *bottom* of the V. The result will be the half-height target. It'll be close to the extension's top, so the profit margin may be slim, too.

Using Figure 70.3 as an example, the full-height target would be the high at A. As you can see, the stock never made it that high.

A closer target would be half the height added to the bottom of the V. Eyeballing the chart, A is at 25 and the bottom of the V (B) is near 13, for a height of 12. Divide 12 by 2 to get the half-height value, or six. Add six to the price at the bottom of the V to get a half-height target of about 19. Price in this example reaches the target at D, right where the breakout is. If you were to trade this with a half-height target, the success rate would be 100%, but you'd make no money.

Table 70.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The measure rule target is the left side of the V. The bottom portion of the table shows how often price reaches the target using various heights.
Buy	Place a buy stop a penny above the top, right side of the V (as soon as you know an extension is forming).

Description	Bull Market	Bear Market
Percentage reaching half height target	92%	93%
Left top of V	51%	36%
Percentage reaching 2× height	23%	10%
Percentage reaching 3× height	15%	4%

You can multiply the height by any number you wish before adding it to the V's low. Higher than 1 and the chances of price reaching it diminish dramatically, as the table shows.

Buy. As soon as you recognize the extension of an extended V-bottom, you can place a buy stop a penny above the top of the extension. That way, if price drops instead of rises, you won't enter a trade. If price rises, it'll get you into the trade at a good price. Just be aware that the ride to the ultimate high (or measure rule sell target) will likely be a bumpy one. Look at other extended V-bottoms (search for one in the same stock, stocks in the same industry, and stocks *not* in the same industry, in that order, until you find a few examples) to see how price has behaved after the extension completes. The time spent doing the research might save you a bundle.

Experiences

After peaking in early 2018, Cabot Corp. (CBT) saw price plummet in October before reaching a bottom in December 2018. I show only the December drop in **Figure 70.4**. Price made tall swings after that, and it looked to be forming some kind of volatile base.

The extended V-bottom I chose to trade is A to B (the left side of the V) with a recovery up to C, and the extension drifting down to H. The left side of the V sees price drop 18%, so it's above the 15% minimum I like to see.

I admit that this extended V isn't typical. The extension (CH) is too far up the pattern. It should be located no higher than a third of the way up the left side. That's not a hard rule, though, just a guideline. I was more focused on the stock breaking out of the horizontal move (from December to June) rather than looking at this trade as an extended V. I used the extended V, as awful as it looked, as the buy signal. Maybe if the stock broke out upward from of its volatile up-and-down motion, it would form a straight-line run higher. Wouldn't that be nice?

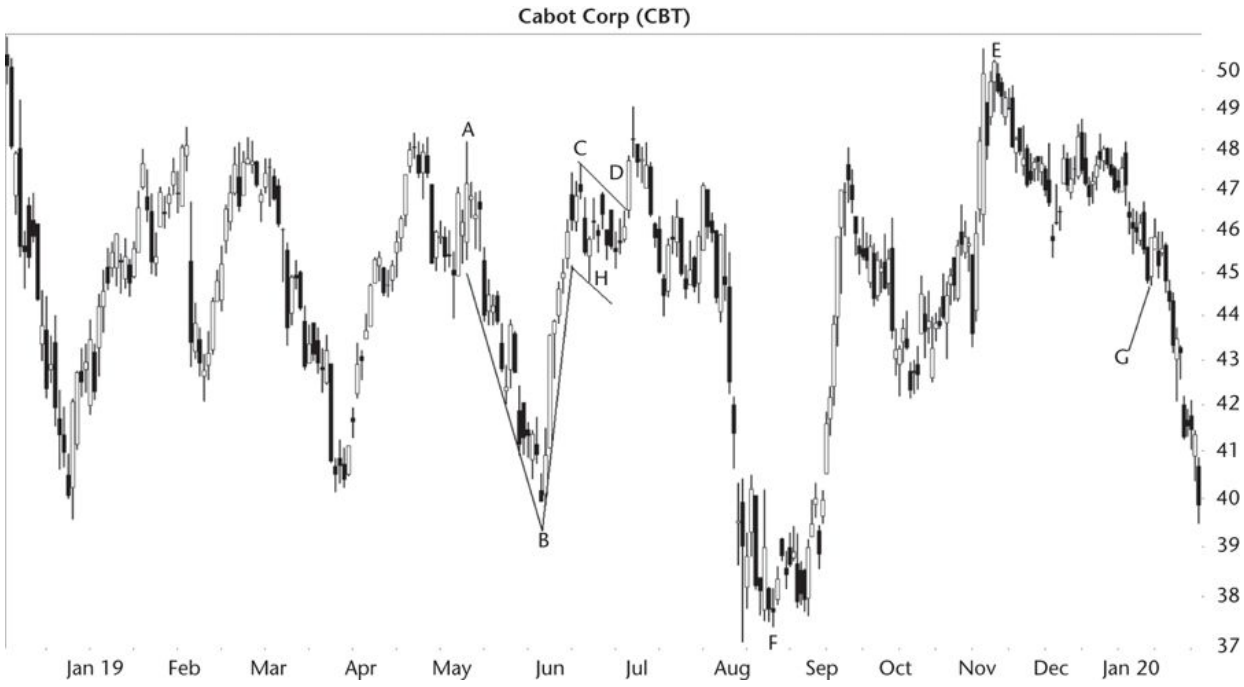


Figure 70.4 This extended V-bottom results in a two-losing and one-winning trade.

At D, I bought the stock as price broke out upward from the extension. The next day price peaked, and then, well, it fell apart.

The recommended position size calculated by my computer was well below a full position (based on volatility of the stock and the general market), and I took half of that, so the result was one-third the maximum size.

I considered this trade both a buy-and-hold position and also a swing trade with a 63 to 66 target.

What does that mean?

I had a sell target in mind (63 to 66) but didn't particularly care how long it took to get there (within reason, that is). That may sound strange, but when you have excess cash and don't like to see it earning almost zero in the brokerage account or money market fund, I like to put it to work.

The buy-and-hold also gave me flexibility with stop placement. That means I didn't have to use a stop, but I calculated one anyway: 43.57 or almost 6% below the buy price. I didn't use it, as I mentioned. From my notebook: “Consider selling on close below 44.50, the extension part of the V-bottom (below H).”

The upside target was the bottom of a flat move from July to October 2018 (not shown). It made for a formidable resistance layer. “It won't go much higher,” I wrote in my notebook.

The industry and markets were up over a look back of 1 month but weaker going back 2 and 6 months, so both were recovering. The stock was rising against the S&P 500 index, which is important. I like to choose stocks that are doing better than the general market.

With the low at H as a good place to sell the stock should the trade go bad, what did I do? I bought more, of course, a bit less than a third of a position at F. “15 August 2019. Buy reason: Average down. Yesterday the Dow [industrials] were down 800, and I was hoping it would sink more today so I could grab a few. But the market and the stock didn't move much. I bought about 20–30 minutes before the close. I'm thinking that the stock will recover. It's like a flat base followed by pothole setup. All it has to do is go back up to the low 60s.”

The stock recovered, as the chart shows. At E, I wrote this in my notebook: “8 November 2019. This looks like an easy win. The flat base is obvious, from November 2018 to late October 2019. The stock has broken out above this. So I'm expecting a rise up to the low-to-mid-60s, say 65 as a target. Buy reason: flat base. I'll double my position.”

The first buy had bad timing. Yes, the stock continued higher but for only a day. The second entry had wonderful timing. I bought at the bottom of the trading range. The third buy, the one at E, was also spectacularly bad. The stock dropped after I bought. The “easy win” was anything but.

On 13 January 2020 (G), I decide to sell. “Order details: I sold it all yesterday just before it gained a point. Sell reason: Weakness. I don't see this making an explosive move upward like the tech stocks, so I can better put the $ to use elsewhere.”

Indeed, the stock wasn't finished going down. When Covid-19 hit, it took the stock all the way down to bottom at 20 in March, a drop of 55% below my sale price.

On the first trade, I lost 2%, the middle one made me 21%, and I gave back 9% on the third trade. That's with dividends included.

- Lesson: Even buy-and-hold positions go bad. A timely sale of the first position would have been at H, below the extension's low.
- Lesson: The second trade would have been perfect had I sold at E instead of buying more.
- Lesson: The third trade should have been sold as soon as it became clear I had made a mistake.

Sample Trade

Figure 70.5 shows this chapter's sample trade Jake made.

The stock started forming the V at G, but Jake didn't recognize it at that point. No one would see the potential for the pattern then. Price made an amazing straight-line run down (A) from around 6 to below 2 in about two months, for a drop of 69%. *Ouch!*

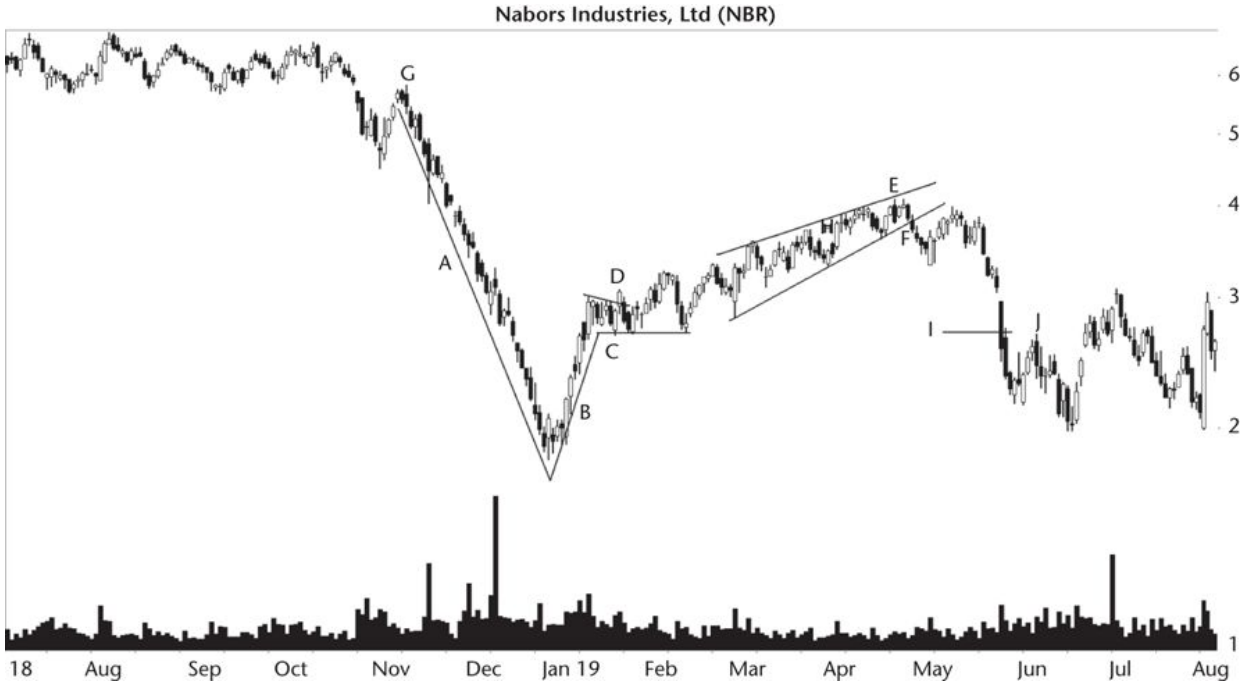


Figure 70.5 Jake makes 24% on this extended V-bottom trade.

One could expect a bounce after that kind of a crash, but would it form a V? Time answered that question. Price recovered, following B, an almost mirror rise to the "A" decline (but much shorter).

When price hit $3, the stock started moving sideways, forming the extension which I show as C.

"I watched the V-bottom unfold and saw the stock move sideways [at C]. The consolidation region was unusually tight-looking [before peak D], and when the stock broke out upward from the top of that region [at D], I decided to buy."

He received a fill at 2.96 at the open the day after D. The stock dropped that day and the next. "I thought I had made a mistake. Usually my trades work right from the start or not at all. I was

concerned, but I'm also a patient trader and price didn't drop much, fortunately."

He continued to hold onto the stock, and it rewarded him with a move up in early February that threw back to the bottom of the extension (the last touch of line C, on the right).

The full-height measure rule target was the high at G, or 5.82. The low at the bottom of the V was 1.81 for a height of 4.01. Half the height was 2.00, which, added to the bottom price of the V, gave a half-height target of 3.81. That matched the high price at H (early April, the letter is buried in the chart about midway in the rising wedge).

"I placed a stop below the extension [at 2.61] because I liked how it acted as support. Maybe it would do so again." If you look at the chart, you'll see that it didn't support price during the drop in May (shown as a horizontal line at I, but did act as resistance at J).

Price climbed in a rising wedge–type move (the two up-sloping and converging lines). Jake didn't use the half-height target at H as a sell signal.

When price closed below the bottom trendline at F, he sold the stock at the next day's open and received a fill at 3.67 for a gain of 71 cents or 24%. If he'd sold at the half-height target, he could have made 29%. That's one of the reasons I suggest short-term traders use price targets as sell signals. Often you'll make more and reduce stress at the same time.

If he'd sold at the ultimate high, E (4.08), he could have made 38%.

71
V-Tops

RESULTS SNAPSHOT

Appearance: Looks like an inverted V.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish continuation
Performance rank	20 out of 36	5 out of 19
Breakeven failure rate	29%	14%
Average decline	15%	24%
Volume trend	Downward	Downward
Pullbacks	56%	56%
Percentage meeting price target	37%	55%
See also	V-top extended	

The V-top is better described as an inverted V-top because that's what it looks like. I'll show a chart of one later. The Results Snapshot reveals a pattern that sees price fall the usual amount for bearish patterns, about 15% in bull markets, but the breakeven failure rate is high, at 29%. That value sounds a note of caution that this pattern should be traded only by the experienced hand.

The performance rank for bearish patterns is top notch, placing fifth where a rank of 1 is best. Bull market performance shows the rank well down the list, at 20 out of 36 pattern types.

Tour

Figure 71.1 shows an example of a V-top after a long and sometimes violent downtrend. The stock formed a rounded top from October 2010 to June 2011 (not shown), then moved sideways for about a month. The stock tumbled, as shown in the chart, forming a V-top. That's an odd place to put a topping pattern (at the bottom of a downtrend), but it qualifies as a valid V-top. Why? Because price climbed substantially during creation of the pattern. In this case, the move from the low at A to the high at B was 28%. If you had to run up a hill that was 28% higher than where you stood, you'd understand the significance.

The stock broke out of the pattern downward when it retraced 38.2% of the rise up from A by definition (that says where the breakout is located and is not a reflection of the continued drop to C). The right side of this pattern almost saw the stock return to the launch price of A, but did not quite make it. Eventually, though, at D the stock dropped below the price of A. After that, the stock began to recover from the carnage of the prior six months.

What this chart shows is typical for the V-top. It's rare that the stock will drop on the right side of the V to the price level of the left side. In my terms, the stock doesn't return to the launch price as often as you'd like or expect.

Let's look at guidelines for identifying V-tops.

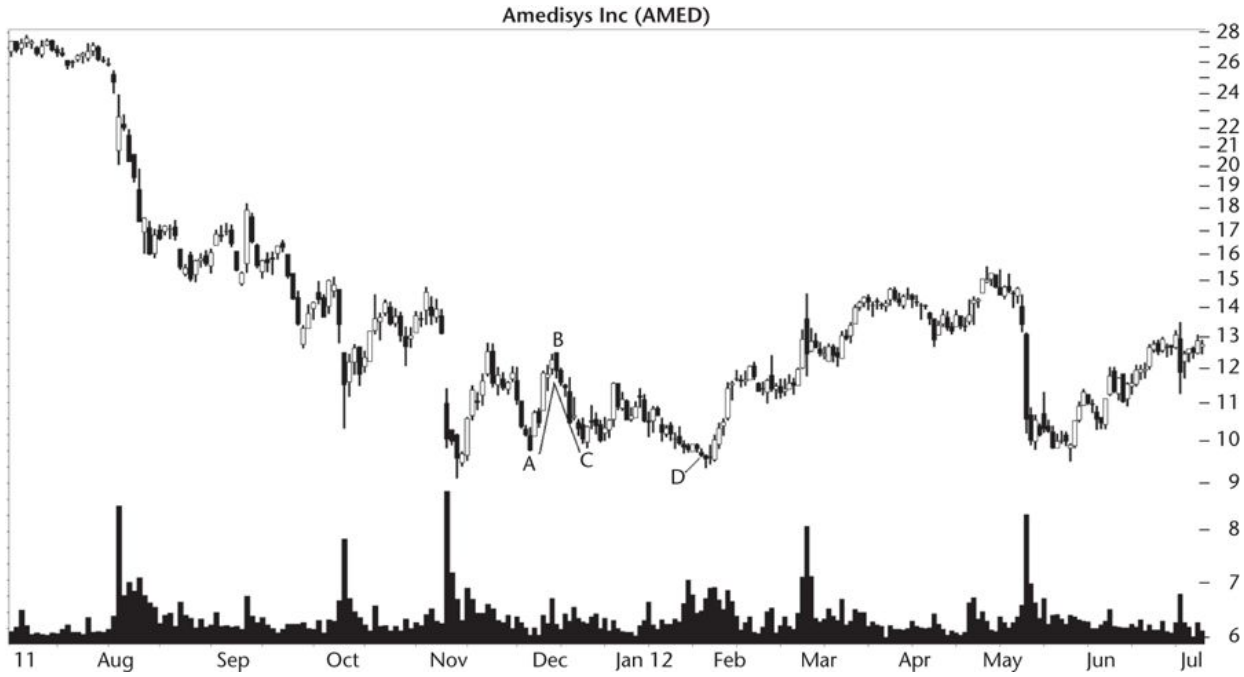


Figure 71.1 A V-top appears at the bottom of a downtrend.

Identification Guidelines

Table 71.1 shows identification guidelines.

Appearance. The V-top is a pattern that sees price make a dramatic move higher, often following a straight line. The uptrend reverses. In well-behaved patterns, the move down the right side of the pattern mirrors the rise on the left.

For example, the V-top in Figure 71.2 is at ABC. Price rises from A to B and then just as quickly drops from B to C. Notice that C doesn't quite make it down to the launch price A, and that's typical for many patterns, not just the V-top. Keep that tip in mind: *Price doesn't return to the launch price*. It comes close, but often stops just above the launch price. You can use that tip in your trading to better time your exits.

Table 71.1 Identification Guidelines

Characteristic	Discussion
Appearance	Looks like an inverted V. Price makes a sharp rise and turns lower.
Rise	Price climbs at least 15% to the top of the V.
Volume	Downward but the trend is close to random.
Breakout direction, confirmation	Breakout is downward when price retraces at least 38.2% of the prior rise. A downward breakout confirms the pattern as valid.
Duration	At least 14 days long with a maximum of 3 months.

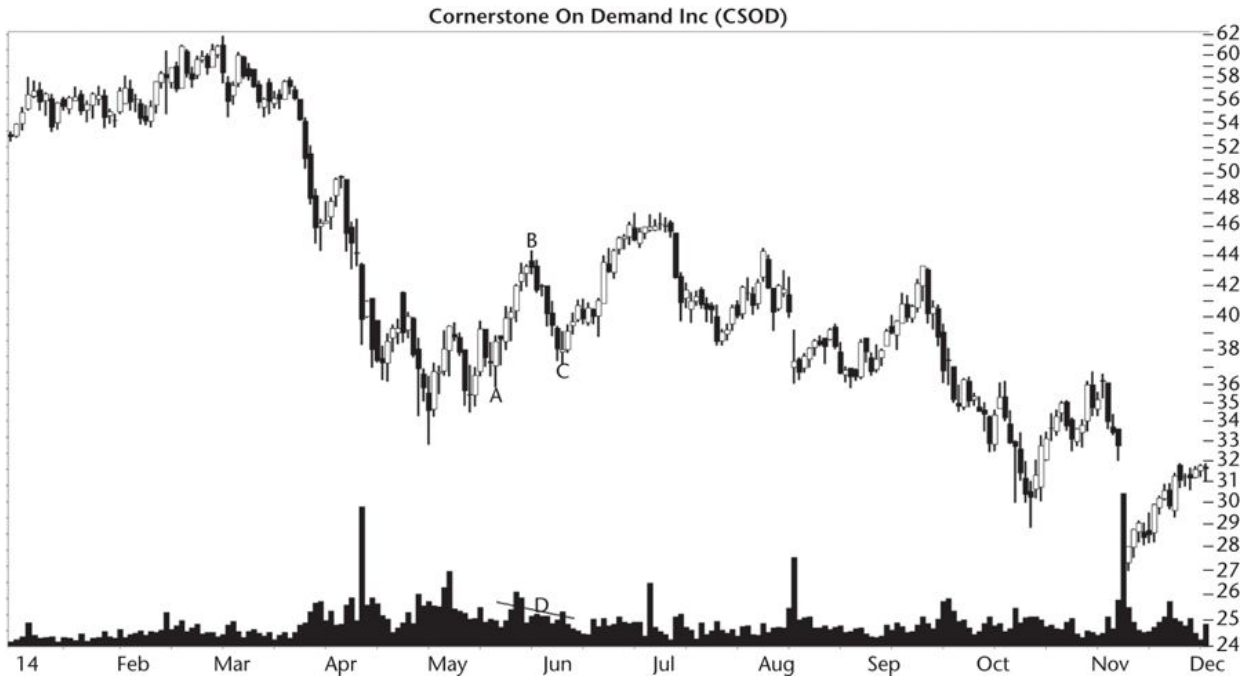


Figure 71.2 This V-top does not see price return to the launch price.

Rise. To qualify and keep the sample count reasonable, I require a climb of at least 15% to the peak of the V-top from the launch price. In the figure, that means I measured the rise from A to B as a percentage of A. In this example, price rises 24% from 35.87 to 44.37 (low to high).

Volume. Volume trends lower from the start of the pattern to the end, but Table 71.6 will show that the numbers are close to random. Don't discard a pattern because of an unusual volume trend.

Breakout direction, confirmation. The breakout direction is downward by definition. I measured the rise from A to B and computed a retrace of 38.2% of that rise. If the stock dropped to that price (on the move from B to C), then it qualified as breaking out downward. Meeting the retrace was also the entry signal.

The pattern confirms as valid when it retraces at least 38.2% of the prior rise (breaks out downward).

Duration. I limited the length of the pattern from 14 days to 3 months. Shorter than 2 weeks and price didn't climb far enough to be a valid turn or it was composed of one tall price bar followed by a retrace. Longer than 3 months and the pattern often didn't resemble

an inverted V. You can use your own guidelines, of course, but that is what I used.

Focus on Failures

Figure 71.3 shows what a failure of a V-top looks like. The V-top pattern is at ABC. Price makes a strong push higher, from A to B, in a straight-line run up. That's how it should be. The move measures from the low at A (38.26) to the peak at B (47.02) for a rise of 23%, easily meeting the 15% minimum.

Figure 71.3 This is what a typical failure of a V-top looks like.

The height of AB is 8.76 and 38.2% of that is 3.35. Subtracting the result from the peak at B gives a confirmation or breakout price of 43.67. The low at C just squeaks by with a value of 43.31. In other words, the drop from B to C was far enough to qualify this as a valid V-top. Volume trends downward as shown at D and verified by linear regression.

Everything looked like a textbook V-top. And that's where the story turns into a nightmare.

Price hits the low at C and then starts a climb to a new high. Price busts the downward breakout at E when it closes above the top of the chart pattern.

Why did this pattern fail? That's a good question for which I don't have an answer. Imagine that price continued lower after C. The

pattern would *look* like a V-top. But the way this one looks, it's hard to see the pattern qualifying as a valid V-top, even though it does.

Price *did* move lower, but it wasn't until after E when the stock moved downward. I can only say that at C the bulls weren't ready to surrender to bearish selling pressure. Buying demand overwhelmed selling pressure and up the stock went.

The company announced earnings in late February, and the following day, F, price reacted to that announcement. Over the next 10 days or so, the stock retraced its gain, forming a bottom at A.

This rise–retrace move is what I believe to be typical for a good earnings announcement (an event pattern). The stock shoots higher then turns downward in a week to 10 days. This one dropped sooner than I would have expected, but it does bottom within the 10-day window.

After that, the smart money grabs hold of the stock and encourages the bulls to buy like crazy, overwhelming selling demand. That leads to a straight-line run up to B where the stock takes a brief rest, like sitting on the summit of Everest. You don't want to stay too long in the dead zone.

We can guess that a rule might be not to trust a V-top within a month (or maybe longer) of better-than-expected earnings. There's too much enthusiasm to force price down in a successful V-top.

Statistics

Table 71.2 shows general statistics for the V-top pattern.

Number found. I located almost 4,000 V-tops in 973 stocks from July 1991 to June 2019. Not all stocks covered the entire period, but they sure are plentiful. Some stocks no longer trade, but it's not the fault of V-tops. I just wanted to make that clear.

Table 71.2 General Statistics

Description	Bull Market	Bear Market
Number found	2,416	1,599
Reversal (R), continuation (C) occurrence	55% R, 45% C	35% R, 65% C
Reversal, continuation performance	–14% R, –16% C	–20% R, –25% C
Average decline	–15%	–24%
Standard & Poor's 500 change	–2%	–7%
Days to ultimate low	21	19
How many change trend?	29%	52%

Reversal (R), continuation (C) occurrence. I checked the short-term inbound price trend to see if the pattern acted as a reversal or continuation pattern. Why bother? Because I've seen reversals outperform continuations in some patterns.

Wouldn't it be nice to get a trading edge by just looking at a pattern (that is, comparing the direction of the inbound price trend with the anticipated (or real) breakout direction)?

In bull markets, slightly more patterns acted as reversals than continuations. That behavior flips for bear markets. In bear markets, almost two out of three patterns act as continuations.

Reversal/continuation performance. For V-tops, continuations perform better than reversals. So if you want an easy way to improve your trading results, trade with the trend.

Because we know price breaks out downward from a V-top, the inbound trend should also be downward leading to the start of the V-top.

Figure 71.1 shows an example of the V-top appearing in a prevailing downward price trend (yes, I know I made a big deal of price rising into the V-top, but let's not confuse the issue with facts).

Average decline. The star performer is the drop in bear markets, which averages 24%. Trade continuation patterns and you can boost that up to 25% (the prior row).

Standard & Poor's 500 change. I show how the index performed using the same hold time from the breakout to the ultimate low. The V-top pattern outperforms the index by a wide margin.

You can think of the results as how much of a push the general market lends to patterns. It's a big push in bear markets (7% downward) but smaller in bull markets (2% downward).

Days to ultimate low. Price bottoms quickly after downward breakouts. In about 3 weeks, the drop has ended. Imagine making 25% in 19 days. Nice. Of course, those numbers are averages and that's if you trade the pattern perfectly and frequently. In fact the drop in bear markets is 1.8 times as fast as in bull markets according to the numbers in the table.

How many change trend? This is a measure of how many V-tops see price drop more than 20%. It favors upward breakouts, which can be unlimited. Downward breakouts can lose only 100% of their value.

The table shows the penalty a trader faces when trading against the market trend. By that I mean trying to short in bull markets. Just 29% of the V-tops see price drop more than 20%. In bear markets the result is nearly double the bull market result.

Table 71.3 shows failure rates, and it's an exciting list of numbers! Well, maybe I exaggerate.

I consider a chart pattern a failure if price can't drop more than 5% after the breakout. For the V-top, we see that 29% qualify for dud status in bull markets. Over half (60%) of V-tops will fail to see price drop more than 15% in bull markets. The numbers suggest, perhaps

strongly, that one should only trade a V-top in bear markets and then only if you know what you're doing.

Let me show how this table is useful. Let's say the measure rule picks a target $5 below the current price of $50. That's a 10% drop. How many V-tops will fail to see price drop more than 10%? Answer: almost half, or 47% in bull markets. That's a huge failure rate.

Table 71.4 shows breakout statistics.

Breakout direction. By definition, a V-top has a downward breakout. If price does not break out downward, then you don't have a V-top. If price *closes* above the top of the V (before dropping below the 38% retrace), then that's a failure.

Table 71.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	705 or 29%	223 or 14%
10	426 or 47%	176 or 26%
15	327 or 60%	191 or 38%
20	253 or 71%	157 or 48%
25	212 or 80%	156 or 58%
30	143 or 86%	150 or 68%
35	124 or 91%	119 or 75%
50	168 or 98%	259 or 92%
75	57 or 100%	124 or 100%
Over 75	1 or 100%	4 or 100%

Table 71.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	100% down	100% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –16%, M –15%, H –14%	L –26%, M –22%, H –19%
Pullback occurrence	56%	56%
Average time to pullback bottoms	–11% in 7 days	–15% in 8 days
Average time to pullback ends	13 days	13 days
Average decline for patterns with pullbacks	–16%	–21%
Average decline for patterns without pullbacks	–14%	–27%
Percentage price resumes trend	30%	32%
Performance with breakout day gap	–17%	–27%
Performance without breakout day gap	–15%	–23%
Average gap size	$0.72	$0.71

What does a failure to break out downward look like? Figure 71.3 shows an example except the right side (the drop from B to C) would not drop to the 38.2% breakout price. If price doesn't make it down that far, then by definition it's not a valid V-top.

Yearly position, performance. I sorted the patterns into bins according to where in the yearly price range the breakout occurred and mapped performance.

For both bull and bear markets, the best performance comes from V-tops within a third of the yearly low. The worst performance comes from patterns near the yearly high. This makes sense. You should avoid shorting stocks making new highs, but consider shorting those patterns making new lows. That's a general rule, of course, and there are exceptions. If you're me, you avoid shorting altogether (due to unlimited risk).

Speaking of risk, I mentioned this anecdote in Chapter 37, but it bears repeating. Joe Campbell had $37,000 in his brokerage and bet a $2 biotech stock would fall further. The next day, the stock surged to $16, wiping out his account and resulting in the brokerage handing him a bill for an additional $106,000. Think about that the next time you short a stock.

Pullbacks. Pullbacks happen just over half the time. They must occur within a month of the breakout by definition.

A pullback sees the stock return to the breakout price, often in about a week, before (sometimes) resuming the downward trend. The table shows details about the depth and speed of the pullback. If you're an experienced trader, you may be able to short at the breakout and set an order to cover in a week at about 10% below the current price.

Pay attention to how often price resumes trending lower. To flip the numbers around, we see that up to 70% of the time, the stock will continue *rising* after a pullback completes. In other words, the low found during a pullback becomes the ultimate low.

Gaps. The last section of the table concerns breakout day gaps. The appearance of a gap on the breakout day suggests better performance. That's frequently (but not always) the case for various types of chart patterns.

Fortunately, you don't have to be in the stock to take advantage of a gap. I measured performance from the opening price the day *after* the gap to the ultimate low, so you can buy the stock later to participate in the performance.

With a V-top and a mechanical location of the breakout (set at a 38.2% retrace) it's difficult to justify that a gap appearing on the breakout day has any real significance. However, I think what the numbers are saying is that a gap shows selling enthusiasm and that enthusiasm translates into a larger decline than if a gap did not occur. To put it another way, price that gaps a lot during a downtrend in a stock probably tumbles further than a stock not showing a gap (but I haven't tested this notion).

Table 71.5 lists statistics related to the height and width of the V-top.

Table 71.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–18%	–30%
Short pattern performance	–12%	–17%
Median height as a percentage of breakout price	25.3%	31.0%
Narrow pattern performance	–15%	–20%
Wide pattern performance	–15%	–27%
Median width	18 days	18 days
Short and narrow performance	–12%	–16%
Short and wide performance	–12%	–19%
Tall and wide performance	–19%	–33%
Tall and narrow performance	–17%	–26%

Height. Tall patterns perform better than short ones. Why this happens I haven't a clue, but it serves as a good rule for most chart pattern types. I measured height by taking the difference between the peak at the V-top and the bottom of the pattern (left side, where the pattern starts), divided by the breakout price. If the result is above the median shown in the table, then you have a tall pattern. Tall patterns perform substantially better than short ones.

If you are trying to calculate the height to breakout price before the breakout, then divide the pattern's height by the price of a 38.2% retrace of the upward move (that is, take 38.2% of the AB rise in Figure 71.3 and use that in the calculation). Compare your result with the median in the table to see if your V-top is short or tall. It's worth the effort to exercise your calculator.

Width. Width doesn't give any advantages to trading in bull markets, but wider patterns perform better in bear markets. Even in bull markets, I'd stick to trading wide patterns. Why? Because the median performance (not listed) is one percentage point better if the pattern is wide (12% versus 11%). That's not much of a difference, but it is an edge, based on 2,416 patterns.

Height and width combinations. You'd expect to see tall and wide patterns outperform and short and narrow patterns (the opposite of tall and wide) to be the worst performers. The table shows that's true. So run the height and width calculations of the V-top you wish to trade to see if you have an advantage or not.

Even if the results say the pattern will outperform, it's not guaranteed. You can flub the trade anyway. Regardless, the numbers are for over a thousand *perfect* trades, so your results will vary. You may make more than the average (or less).

Table 71.6 shows statistics related to volume shown during the V-top.

Volume trend. I measured the trend using linear regression and found that it trends downward just over half the time.

Rising/Falling volume. Sorting performance into V-tops that showed rising volume from falling volume, we see better performance from those with a rising volume trend. The separation is highest in bear markets.

Table 71.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	55% down	57% down
Rising volume trend performance	–17%	–27%
Falling volume trend performance	–14%	–21%
Heavy breakout volume performance	–15%	–24%
Light breakout volume performance	–15%	–24%

Breakout day volume. Breakout day volume doesn't have any effect on performance. That could be because the breakout date is set at an arbitrary location (partway down from the peak). Traders would not recognize a breakout from a V-top under those circumstances.

Table 71.7 is supposed to show where to place the stop, but that table is only meaningful for patterns with breakouts at the top or bottom of the pattern, so you won't find that table here.

Table 71.8 shows how the V-top has performed over the decades.

Performance over time. The numbers are close enough that there's not a big difference between them. The 1990s showed the best performance, and the 2000s had the worst.

Failures over time. The 2010s had the highest number of failures with almost a third of the V-tops failing to see price drop more than 5% during that decade. However, the three decades show similar failure rates.

Table 71.9 shows how busted patterns performed. A bust occurs when price breaks out downward (for the V-top), drops less than 10%, and then closes above the top of the pattern.

Busted patterns count. Almost half (46%) of V-tops in bull markets will bust their downward breakouts. Wow. Bear markets do substantially better with "only" 25% busting.

Busted occurrence. I sorted the types of busts into three categories. Single busts happen most often with triple+ (more than two) busts coming in second place. We've seen that behavior in other types of chart patterns, too.

Busted and non-busted performance. I used the performance of V-bottoms as a gauge of how a busted V-top might perform. Single busted V-tops tend to see price soar, performing better than all busted patterns as a group and beating V-bottoms, too. However, you have to guess right that a single bust will occur (as opposed to a double or triple bust). With 84% of V-tops busting just once, that should be easy. Avoid patterns with nearby overhead resistance.

Table 71.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–16%
2000s	–14%
2010s	–15%
Performance (above), Failures (below)	
1990s	27%
2000s	30%
2010s	31%

Table 71.9 Busted Patterns

Description	Bull Market	Bear Market
Busted patterns count	1,113 or 46%	382 or 25%
Single bust count	931 or 84%	272 or 71%
Double bust count	60 or 5%	28 or 7%
Triple+ bust count	122 or 11%	82 or 21%
Performance for all busted patterns	41%	22%
Single busted performance	48%	29%
Non-busted performance (V-bottom)	40%	32%

Trading Tactics

Table 71.10 shows trading tactics. You might want to ask yourself if it's wise to trade this pattern at all.

Measure rule, targets. The measure rule target is easy for the V-top. It's the bottom of the pattern, where price begins its march to the V-top's peak.

The lower portion of the table shows how far down price might drop versus how often it actually makes it down that far.

For example, I found that price drops halfway down the V-top 82% of the time in bull markets and even higher in bear markets. Just 37% will reach the low set by the left side of the pattern. That means if you set the launch price as the target, you'll be wrong 63% of the time, on average, if you trade the pattern often enough (and it behaves like the ones I've studied).

Table 71.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The price at the start (bottom) of the V-top is the measure rule target. The bottom portion of the table shows how often various heights work for the measure rule.
Busted pattern	Consider trading a busted downward breakout. See Table 71.9 for guidance and read the Sample Trade.
Tips	See text.

Description	Bull Market	Bear Market
Percentage reaching midway down left side	82%	91%
Percentage reaching 2/3 down left side	62%	78%
Percentage reaching left side bottom	37%	55%
Percentage reaching 1.5× height	11%	12%

Busted pattern. Table 71.9 shows how well the average single busted pattern performs. Consider trading one of them. That is, price

should drop less than 10% after a downward breakout, then reverse and close above the top of the pattern. That would be the time to buy, when the stock reaches or exceeds the top of the V-top. Hold it until it reaches the ultimate high and you'll have made a perfect busted trade. I show an example of how difficult it can be to make money following a busted trading strategy next.

Tips. I've mentioned in other chapters that knots of support make for terrific targets, and that's true for swing trades in V-tops, too. A knot is where price overlaps itself for at least 3 days but can be much longer, forming a sideways move.

Use the top price in the knot as the exit price. The knot should be the closest one located below the breakout price on the left side of the V. Price will drop to the top of that knot and start to rebound (perhaps as part of a pullback).

- In another scenario, look from the launch price on the left side of the V to the breakout price. If it's a straight-line run-up, a fast-paced rise but there's no knot to park a sell order at, then divide the run in half and use that.

  For example, if the launch price is 25, the breakout price (not the pattern's top) is 30, and price makes a vertical run up to the V-top, then place an order to cover the short at 27.50. That's halfway down from the breakout to the launch price.
- If the stock is moving sideways, forming a flat base (perhaps month's long) and a V-top appears, then don't short the stock. It's a trap. The stock will likely rise, bouncing off support set up by the flat base.
- If the stock is moving down at a steady clip, at least a month (but can be several months long) of steadily falling prices (like a 30-degree decline), then a short sale of the V-top can be rewarding. The stock after the V-top confirms just drills itself into the ground.

Sample Trade

Figure 71.4 shows this chapter's sample trade using a V-top a bit differently than one would expect.

Jim watched the price of the stock climb in a straight-line run up from A to B and retrace to C. He made sure that the pattern was tall enough to qualify as a V-top (at least 15%) and that the retrace of the AB move was deep enough (at least 38.2%). He also measured the drop from the breakout price to the bottom at C to be sure it would qualify as a busted V-top (the drop below the breakout price must be less than 10%, which it is, but it's an arbitrary limit).

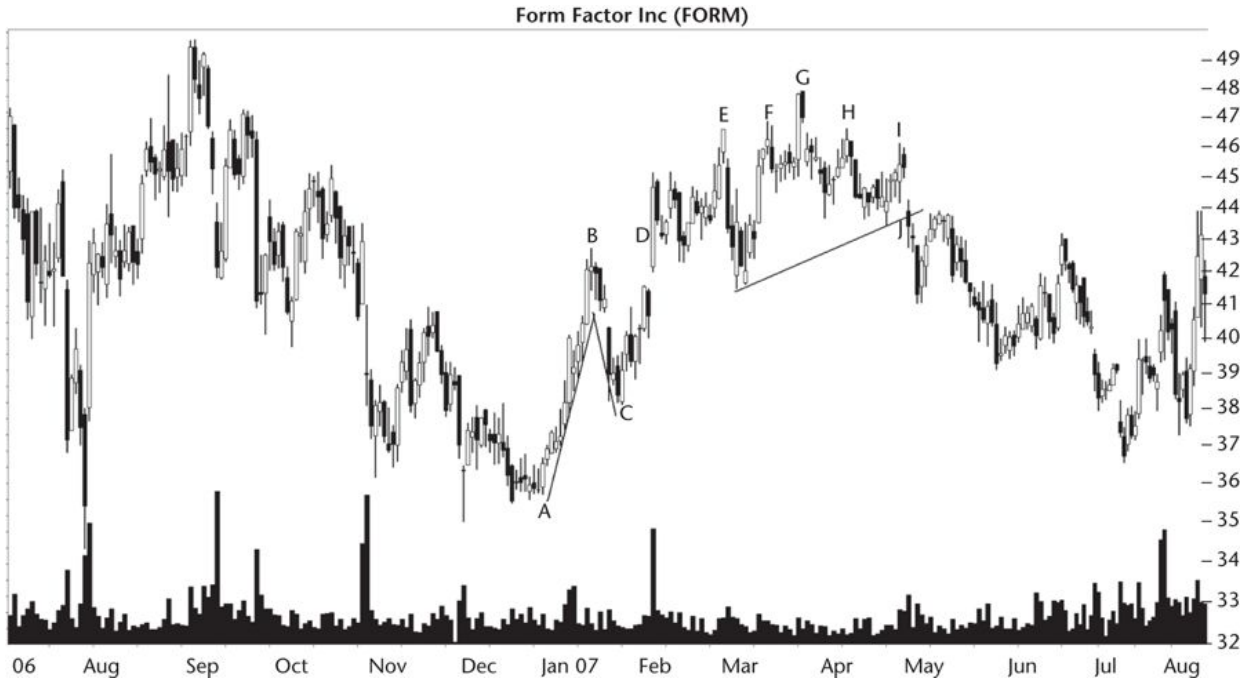


Figure 71.4 Jim traded this busted V-top and sold after a complex head-and-shoulders top appeared.

When the stock turned and started heading up, he placed a buy stop a penny above the top of the pattern. The stock cooperated and gapped higher (an exhaustion gap), but still triggered his buy order at 42.73 (D).

He held onto the stock, hoping to receive a big payout for trading a single-busted stock. He'd have to wait to see if it really was a single bust and not a double or triple+, but the probabilities suggested it would be. “I had faith.”

Price struggled to move higher in the coming months. It peaked at G and then started to ease lower. That's when he noticed a complex head-and-shoulders top pattern. The two left shoulders (E, F) mirrored the two on the right (H, I) with a centrally located head (G). The neckline (the diagonal line leading to J), which is often nearly horizontal, tilted upward at a steep angle. He ignored the slope except that it provided a higher breakout price.

“The head-and-shoulders made me nervous. I forgot about making 84% from a busted V.” He placed a stop-loss order a penny below the low between the two shoulders H and I, at 43.38. It triggered at J, cashing him out of the trade.

“I bought at 42.73, sold at 43.38, and made 65 cents a share, or about enough to buy a sub sandwich at the local deli.”

Obviously, he would have done better if he had sold closer to the high at G, but who can tell that would be the high? Overhead resistance set up by prior peaks *did* suggest tough sledding until it pushed through to new highs. One warning sign was there.

After he sold, the stock dropped, confirming his decision to sell as the correct one. This trade *did* turn into a single busted pattern, but one that didn't come anywhere near the average rise of 84% for single busted trades.

72
V-Tops, Extended

RESULTS SNAPSHOT

Appearance: An inverted V followed by a short retrace.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	2 out of 36	1 (best) out of 19
Breakeven failure rate	15%	5%
Average decline	18%	26%
Volume trend	Downward	Downward
Pullbacks	63%	66%
Percentage meeting price target	49%	60%
See also	V-top, ugly double top	

You might think that an extended V-top is just an extended V-bottom flipped upside-down. That's true but only if you're not a computer. I had to program different instructions to find these compared to the extended V-bottom.

An extended V-top is really an inverted V shape with a horizontal-to-upward retrace on the right side of the V. We'll see an example in a

moment, but the small picture above shows the basic outline. In this chapter, I'll just refer to the pattern as V-shaped, not inverted V-shaped.

The average decline is excellent, ranking first or second (the performance rank) among other bearish chart patterns. The failure rate in both bull and bear markets is also topnotch, ranking third and first for bull and bear markets, respectively.

The pattern can resemble an ugly double top. That's not a pattern I review in this book. Think of a double top as twin peaks near the same price. In the ugly variety, the right peak is below the left one.

Volume usually trends downward over the length of the pattern, from the start of the V to the end of the extension (the day before the breakout).

Let's look at some examples of an extended V-top.

Tour

Figure 72.1 shows what an extended V-top looks like at ABC. It begins with a strong push higher (A) in a straight-line run-up with few or no pauses along the way. The uptrend (in this example) is too steep to be sustainable for very long, so it peaks at B. Reaching the summit is a lot like climbing Mount Everest. You don't want to hibernate up there in the death zone. That means the turn downward happens quickly.

The drop on the right side from the summit is more sedate. In other words, the slope of the right side of the pattern will frequently not be as steep as the left side. You can see that in the figure, where the right side at the start (BC) doesn't quite mirror the left-side slope (AB).

Price drops to C where the extension begins. Price in the extension can be horizontal (rare) or upward (more frequent). I suppose it can even be downward, but I can't recall having seen one of those.

Figure 72.1 Price forms an extended V-top followed by a strong move lower at D.

At the end of the extension, price can either rise or fall. Most of the time it'll tumble (D). When price closes below the low set in the extension, then that's the breakout. This example breaks out

downward. In 11% of cases that break out upward, a close above the top of the extension signals a breakout. In this edition, I'm going to ignore upward breakouts because they are too rare to worry about.

Volume trends downward nearly all the time in both bull and bear markets. I'll discuss volume later in Table 72.6.

Identification Guidelines

Table 72.1 shows identification guidelines for the extended V-top, and Figure 72.2 shows another example.

Appearance. Despite the name extended V-top, the pattern is really an inverted V as I mentioned. Price moves up swiftly at the start of the pattern (AB), turns quickly (at B), and begins heading down (BC).

Bullish buying demand as price drops halts the decline and a battle with the bears begins in earnest. The two warring sides struggle for dominance. If there is no clear winner, the stock will move sideways until one side is overcome. If the bulls are stronger than the bears, the stock will slope upward (CD). Most of the time, bearish selling pressure will overcome buying demand and send the bulls running for cover. Down the stock goes, completing the pattern (E).

Table 72.1 Identification Guidelines

Characteristic	Discussion
Appearance	A straight-line run-up (or nearly so) on the left side of the inverted V followed by a downward retrace that sees price recover only a small portion of the prior rise. Price moves sideways to up in the extension before resuming a downward move, completing the (inverted) V.
Rise	From the bottom of the inverted V to the top, price rises at least 10%, but the average is higher: 31%.
Extension	After price retraces a portion of the left-side drop (of the inverted V), price moves horizontally to up, forming the extension. The stock does not rise far enough to form a second peak. Rather, price pauses for a time in its horizontal-to-upward retrace before resuming the downward move. The median extension is 14 days long.
Volume	Trends downward from the start of the inverted V to the end of the extension.
Breakout, confirmation	A downward breakout occurs when price closes below the bottom of the extension, and it happens most of the time. A downward breakout confirms the pattern as a valid one.
Duration	2 weeks to 3 months.

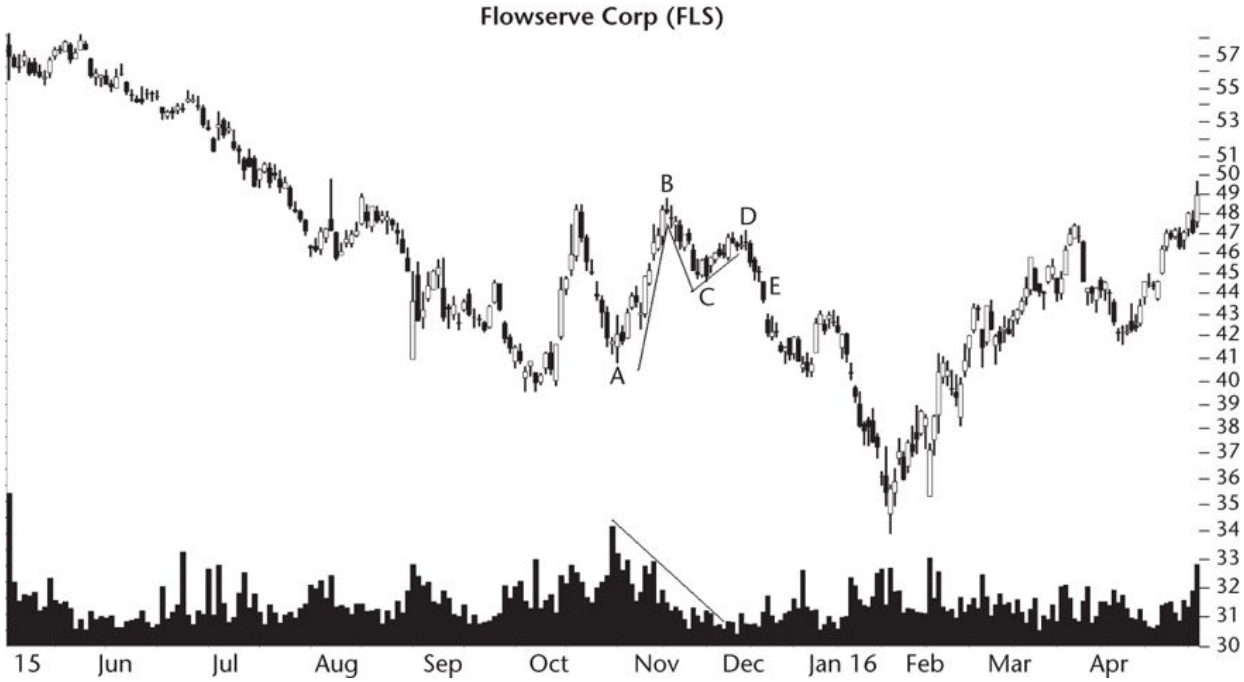


Figure 72.2 Price in this extended V-top sees the stock return to the launch price (A) before pausing.

Rise. Price at the start of the pattern (A) rises, making a straight-line run-up. That means price won't pause (much) along the way to the top at B. If it does pause, then it should be brief. Look for an upward move that's steep and swift so that on the way down you may also have a steep and swift decline (forming a V-top). That's the ideal case. Of course, we're not talking about a V-top but an extended V-top, where there *is* a pause along the way down.

I programmed my computer so that rises on the left side of the V are at least 10% and go up from there, depending on price. The average rise (from A to B) is 31%, but the median is less, 25% (all figures are for bull markets). All of this means that the rise is strong and swift.

Extension. After peaking, the stock turns lower for a time (a week or two, but I didn't measure this) before beginning a retrace against the downtrend. The retrace is the extension (CD). It lasts a median of 14 days in bull markets. Price often rises in the extension, which you can see in the figure as the stock moves from C to D.

Notice peak D remains comfortably below peak B, so there's no confusion of this being a double top.

Volume. Volume trends downward nearly all of the time.

Breakout. The breakout can be either up or down, but you'll find a downward breakout happening 90% of the time (I'm not exaggerating). A downward breakout occurs when price closes below the bottom of the extension.

In the figure, a downward breakout occurs at E, but you can use a higher exit point, such as when price closes below the up-sloping trendline C (making a breakout the day after D in this example).

Because downward breakouts are prevalent, wait for price to break out downward to confirm a valid pattern.

Duration. I limited the pattern's duration between 2 weeks and 3 months. These are arbitrary limits but results seem to work well.

Focus on Failures

Figure 72.3 shows what one of two failure types looks like. If you expect a downward breakout, then an upward breakout is a failure. We see that type of failure in this figure.

The extended V-top begins at A when price starts a steep climb to B. The AB move forms the right side of a big W pattern with the left side peaking at F. You might guess that the downward-sloping channel ending at F would pose a serious problem for the stock to push its way through it heading upward (think overhead resistance). Indeed, the stock *does* rise above the channel (at G) but only briefly before tumbling.

Returning to the extended V-top, the stock reverses direction at B, as if the overhead resistance of the channel (F) was too frightening to attempt a higher summit at this time.

The stock retraced a portion of the AB move by dropping to C. Then the stock moved horizontally, forming the extension. A horizontal extension is rare but a joy to see nonetheless.

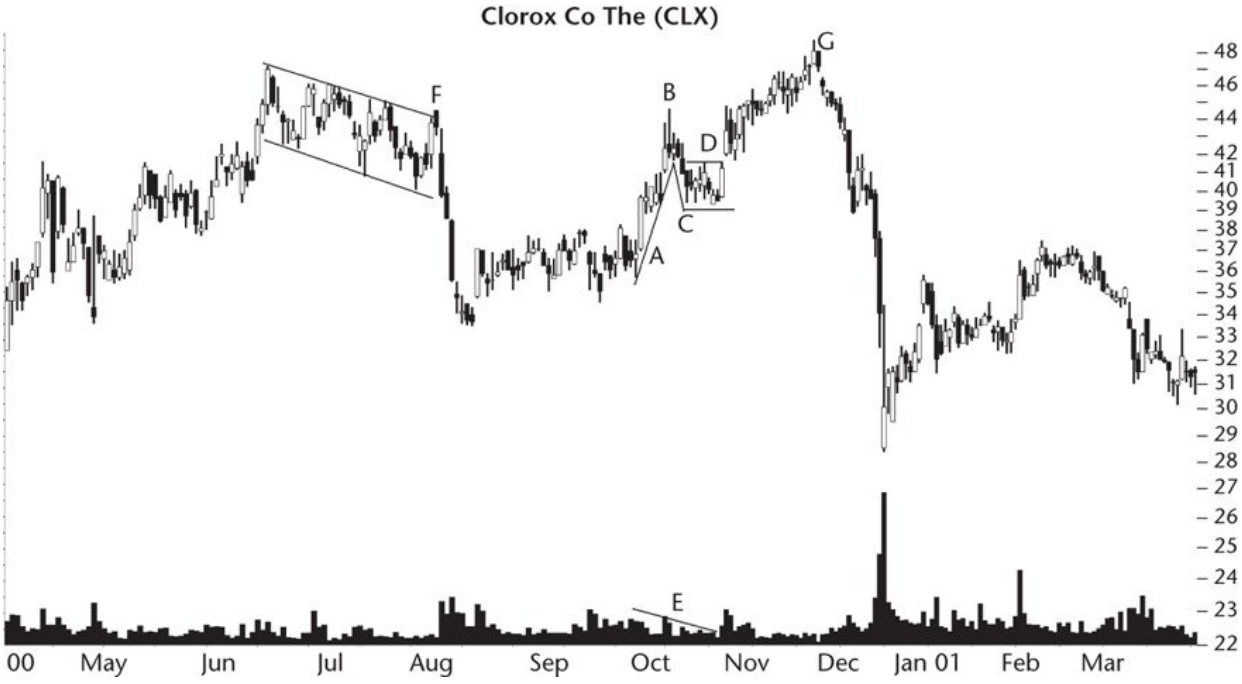


Figure 72.3 Price breaks out upward from this extended V-top. Upward breakouts are rare, but they happen.

In this case, the stock makes a surprise move, gapping higher (breakaway gap) and breaking out upward at D, closing above the top of the extension (the top horizontal line just below D).

The failure of this pattern to break out downward is key. If you shorted the stock during formation of the extension, you'd likely take a loss when price climbed to G.

But there's another type of failure: the failure of a stock to drop far after a downward breakout (the so-called 5% failures). Let's discuss statistics so we can pin down how often the extended V-top fails (which we'll see in Table 72.3).

Statistics

Table 72.2 shows general statistics for the extended V-top.

Number found. I found 1,739 patterns (with upward and downward breakouts) in 891 stocks with the first pattern appearing in July 1991 and the most recent in October 2019. The table reflects only those patterns with downward breakouts.

Reversal (R), continuation (C) occurrence. The extended V-top acts as a reversal most of the time, especially in bull markets. Because we know the breakout is downward, a reversal means the inbound price trend is upward. An extended V-top behaving as a continuation pattern would appear in a downward inbound price trend. Pop quiz: Which performs better, reversals or continuations?

Reversal/continuation performance. The answer doesn't really matter. The numbers are too close to worry about. However, patterns acting as continuations give a slight edge, based on what I found.

Average decline. The average decline is terrific in bear markets, but that's to be expected. If a rising tide lifts all boats in bull markets, then a falling tide sinks all boats. I know that doesn't sound right, but my point is that you'd expect to see downward breakouts in bear markets have larger declines than do those in bull markets.

Table 72.2 General Statistics

Description	Bull Market	Bear Market
Number found	1,217	334
Reversal (R), continuation (C) occurrence	68% R, 32% C	55% R, 45% C
Reversal, continuation performance	–18% R, –19% C	–25% R, –26% C
Average decline	–18%	–26%
Standard & Poor's 500 change	–2%	–9%
Days to ultimate low	45	42
How many change trend?	37%	56%

Standard & Poor's 500 change. Measuring the performance of the S&P index using the same hold time (from breakout to ultimate low), we see the index underperforming the extended V-top. I can't recall the S&P ever beating the performance of a chart pattern, but I'm also not sure it's a fair measure.

Why? I think it's like comparing the performance of a professional marathon runner with an amateur. You'd expect the professional to win every race and by a substantial amount.

However, let's think of the general market as supporting the move in the stock. If the market drops by 2% or 9%, then that drop will help pull down a stock showing an extended V-top.

Days to ultimate high or low. Notice that it takes 45 days to drop 18% in bull markets but nearly the same time (42 days) to drop 26% in bear markets. In other words, price drops 50% faster in bear markets than in bull ones. Therefore, you'll want to short in bear markets so you can get into trouble faster.

How many change trend? I define a trend change as a move of more than 20% from the breakout. This item measures how many patterns see price drop more than 20%. In bear markets, over half the patterns will drop that far, which is terrific. Bull markets suffer, though, with just over a third seeing price drop more than 20% on the way to the ultimate low.

Table 72.3 shows failure rates that I mentioned in the Focus on Failures section earlier. The numbers are cumulative. For example, I found that 183 or 15% of the patterns I looked at (in bull markets) failed to see price drop more than 5%. Another 241, when combined with the prior row's 183, totals 35% of extended V-tops that will see price fail to drop more than 10% after a downward breakout.

Table 72.3 Cumulative Failure Rates

Maximum Price Decline (%)	Bull Market	Bear Market
5 (breakeven)	183 or 15%	17 or 5%
10	241 or 35%	44 or 18%
15	194 or 51%	40 or 30%
20	144 or 63%	45 or 44%
25	119 or 72%	31 or 53%
30	93 or 80%	37 or 64%
35	89 or 87%	28 or 72%
50	116 or 97%	66 or 92%
75	36 or 100%	25 or 100%
Over 75	2 or 100%	1 or 100%

As you scan down the rows, notice how failure rates climb dramatically for small "maximum price declines." In bull markets, half the patterns will fail to see price drop 15% on the way to the ultimate low.

Table 72.4 shows breakout-related statistics.

Breakout direction. The high percentage rate for downward breakouts means the pattern breaks out upward only 10% of the time. That's small, but it's not zero. So if you want to short a stock showing an extended V-top, then I'd wait for confirmation: price to *close* below the bottom of the extension before shorting the stock. It's fine if you trigger on the low price and not the close, just be sure to use a stop to protect your position.

Extension length. For the extended V-top, the extension's length lasts an average of 15 days (calendar). By definition, the extension ends a day before the breakout.

Yearly position, performance. I sorted the breakout price into where it appears in the yearly high–low price range and mapped performance for the three ranges (low, middle, or high).

For bull markets, the best performance comes from patterns with breakouts within a third of the yearly low. That makes sense. You

should short stocks making new lows, not making new highs.

Bear market results say to avoid those stocks trading within a third of the yearly high for the best results.

Table 72.4 Breakout and Post-Breakout Statistics

Description	Bull Market	Bear Market
Breakout direction	89% down	90% down
Extension length	15 days	15 days
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L –21%, M –17%, H –18%	L –27%, M –27%, H –24%
Pullback occurrence	63%	66%
Average time to pullback bottoms	–10% in 6 days	–13% in 6 days
Average time to pullback ends	12 days	11 days
Average decline for patterns with pullbacks	–19%	–25%
Average decline for patterns without pullbacks	–18%	–27%
Percentage price resumes trend	51%	55%
Performance with breakout day gap	–19%	–27%
Performance without breakout day gap	–18%	–26%
Average gap size	$0.30	$0.45

Pullbacks. A pullback happens after the breakout when the stock returns to the breakout price within a month. About two of every three trades in extended V-tops will see a pullback. Why is that important? Because when a pullback appears, performance suffers. That's not evident in the bull market numbers but is more pronounced in bear markets. In fact, most chart pattern types suffer when throwbacks and pullbacks appear. Thus, look for nearby underlying support and choose to trade those situations where support is farther away.

For a quick swing trade, you can short a stock when the low price drops below the bottom of the extension and close out the trade in 5 or 6 days. If done accurately and often enough, you could make about 10% if your trades perform as well as the ones I looked at (and you trade it perfectly).

After a pullback completes (that is, after the stock returns to or nears the breakout price), about half of the stocks will see price drop and half will have found the ultimate low during the pullback journey. Those finding the ultimate low are the ones that see price continue rising.

Gaps. Breakout day gaps (a gap that occurs on the day when price breaks out downward) help performance. With the way I measured performance (from the day *after* the gap to the ultimate low), you can participate in the better performance buy trading the stock even after a gap.

However, gaps don't power the stock downward much faster than those patterns without gaps (meaning the performance numbers are close).

Table 72.5 shows size statistics.

Height. Tall patterns perform better than short ones according to the table, but that's also true for the majority of chart pattern types. Measure the height of the pattern from the start of the V (bottom left side) to the top and divide the result by the breakout price (the low seen in the extension). If the result is higher than the median shown in the table, then you have a tall pattern.

Table 72.5 Size Statistics

Description	Bull Market	Bear Market
Tall pattern performance	–20%	–27%
Short pattern performance	–17%	–25%
Median height as a percentage of breakout price	22.0%	25.3%
Narrow pattern performance	–19%	–28%
Wide pattern performance	–18%	–23%
Median width	34 days	33 days
Short and narrow performance	–17%	–28%
Short and wide performance	–16%	–21%
Tall and wide performance	–20%	–25%
Tall and narrow performance	–21%	–28%

Width. I measured pattern width from the start of the V to the end of the extension (the day before the breakout). Narrow patterns perform better than wide ones, but the percentages in bull markets are close. I used the median width as the marker between narrow and wide.

Height and width combinations. The table shows that tall patterns outperform and narrow patterns outperform, so the best combination will be extended V-tops that are both tall and narrow. That's true in this case, but not for some other chart pattern types. If you can find a pattern that is tall and narrow, then maybe, just maybe, it'll perform better than the other combinations.

You'll want to avoid short and wide patterns, regardless of the market (bull or bear) conditions. They perform worst.

Table 72.6 shows volume-related statistics.

Volume trend. Volume trends downward the vast majority of the time in both bull and bear markets, but more so in bear markets. I found the slope of a line using linear regression from the start of the V to the end of the extension. A downward volume trend suggests higher volume as price rises on the left side of the V and diminished

volume as price slides downward and forms the extension. I've shown the volume trend (with sloping lines on the volume scale, such as point E in Figure 72.3) in the figures accompanying this chapter.

Rising/Falling volume. Extended V-tops with falling volume tend to outperform those with rising volume, but only in bear markets. Bull markets show no preference.

Breakout day volume. Usually high breakout day volume helps performance, but with downward breakouts that's often difficult to see. In bull markets, heavy (above the prior month's average) breakout volume helps performance, but in bear markets it hurts performance. The results are close enough in either case to be a meaningless comparison.

Table 72.7 is supposed to show where to place the stop, but that table is only meaningful for patterns with breakouts at the top or bottom of the pattern. I don't show the table. Maybe you have to read between the lines to see it.

Table 72.6 Volume Statistics

Description	Bull Market	Bear Market
Volume trend	83% down	89% down
Rising volume trend performance	–18%	–23%
Falling volume trend performance	–18%	–26%
Heavy breakout volume performance	–19%	–25%
Light breakout volume performance	–18%	–26%

Table 72.8 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–20%
2000s	–18%
2010s	–17%
Performance (above), Failures (below)	
1990s	13%
2000s	13%
2010s	20%

Table 72.8 shows the performance of extended V-tops over the last three decades but with bear markets removed (because they only occurred in the 2000s).

Performance over time. Performance has steadily deteriorated from the 1990s. I can't explain why. It's a mystery.

Failures over time. By “failure” I mean the failure of price to drop more than 5% after a downward breakout. In the 1990s and 2000s, the failure rate remained steady, but it jumped in the 2010s.

I didn't measure busted patterns for the extended V-top, so **Table 72.9** is not included in this chapter.

Trading Tactics

Table 72.10 shows trading tactics.

Measure rule, targets. Because the pattern is often tall, I set an easy-to-find target as the start of the V on the left side. That corresponds to a full height drop. By that, I mean the lower portion of the table shows how often price will drop to the start of the V: 49% to 60%, depending on bull or bear markets.

If you measure the height of the pattern from peak at the top of the V to the low at the start and multiply it by half, two, or three times the height and subtract the height from the pattern's high, you can see how often price will reach the target on average.

For example, if you use half the pattern's height as a target, the stock will drop to the target nearly all of the time (95% to 98%). It also means that the extension is probably located just above the target.

Short. If you're willing to risk a short sale, then I would place an order to short if the low price drops below the bottom of the extension (or even place it when the stock is near the top of the extension). That way, the order will get you into the trade at a good price.

Table 72.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	The measure rule target is the left side bottom of the V. The bottom portion of the table shows how often various heights work in the measure rule.
Short	For experienced traders: Place an order to sell short a penny below the bottom, right side of the V (as soon as you know an extension is forming).

Description	Bull Market	Bear Market
Percentage reaching half height target	95%	98%
Percentage reaching bottom start of V	49%	60%
Percentage reaching 2× height	12%	21%
Percentage reaching 3× height	2%	7%

For the exit, if you can figure out when price is about to rise (at the end of the trade), then cover your short and hope it's below the entry price.

Sample Trade

Figure 72.4 shows a trade Stan made. He completed checking the company's fundamentals and checked charts on the health of the metals the company sells to make money. He was confident that the stock would continue to decline and be worth the risk of a trade.

Price climbed from A to B and retraced to C. “When the V-top grew an extension [C to D)], that's when I decided to trade the pattern.”

For grins, he computed whether this was a short or tall, narrow or wide pattern. The high at B was 14.90 and the low at A was 12.18 for a height of 2.72. The breakout price was the low at C, or 13.51. That gave the height-to–breakout price ratio of 20.1%. So the pattern was short (bad) according to the median in Table 72.5.

The start of the V was on 11 September 2018 and the end of the extension was 3 October 2018 for a width of 25 days. Narrow is good. A pattern both short and narrow according to Table 72.5 is second-to-worst performance of the four combinations. That's not ideal, and it implies a higher risk trade.

The measure rule target is the left side of the V, or 12.18 (A). The half-height target would be 14.90 – 2.72/2 or 13.54. The low at point C (13.51) is below the half-height target, so that's no help.

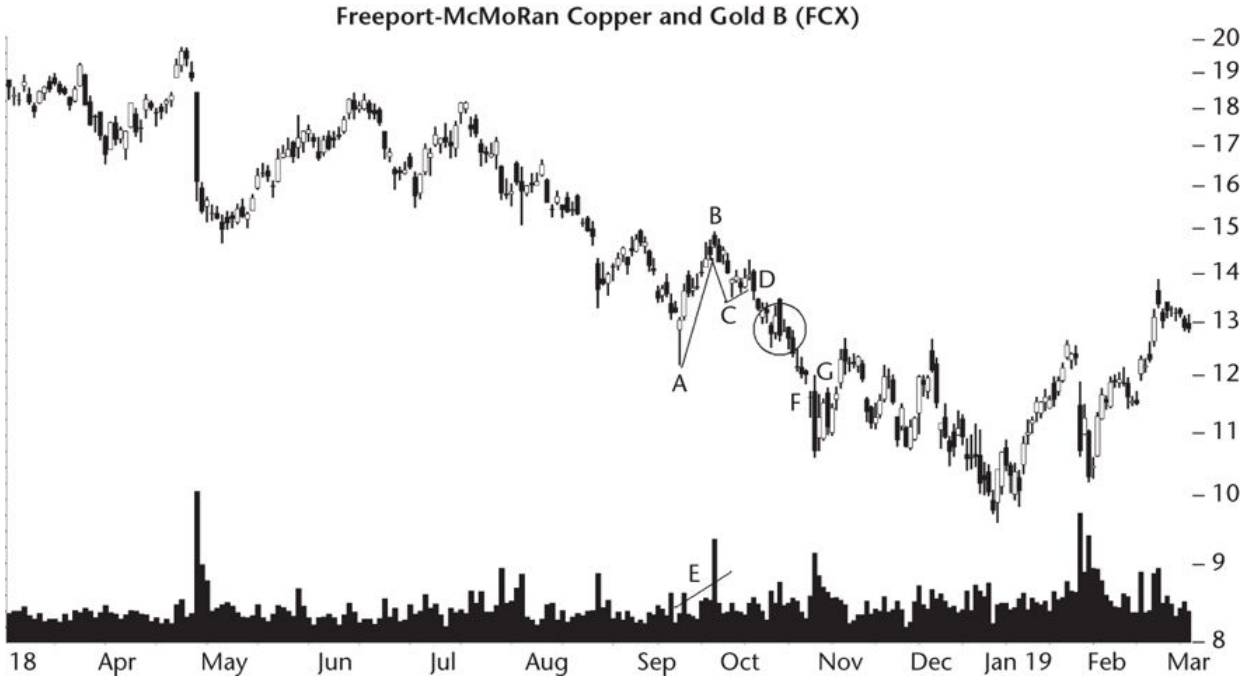


Figure 72.4 Stan uses lower highs to exit this extended V-top trade.

He set the bottom of the V as his target and shorted the stock at a price of 13.50, or a penny below C.

The trade began on bar D when the stock made an intraday low below C.

As the days ticked past, he watched the stock move lower. At the circled area, the stock ran into support and moved sideways for several days. That sideways move might be a corrective phase of a measured move down. That's the high in the extension (above D at 14.28) to the low in the correct phase at the start (12.51) subtracted from the high in the corrective phase (13.47) to give the 11.70 target. (The high at candle F is at 11.71, a penny above the target.)

“I decided to cancel my order to close out the trade at the target [the price of the low at A] and instead to let it ride.”

A strong downtrend developed.

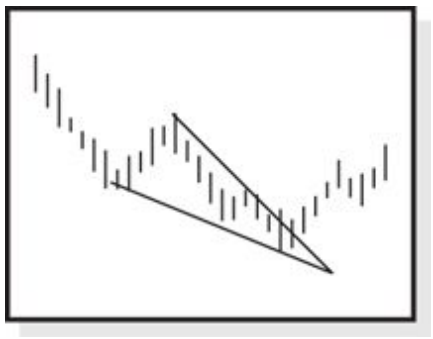
As price dropped out of the corrective phase (circled area), each price bar's high was below the prior bar's high. “I knew to wait three price bars [to assure a strong trend] before acting” on this feature.

After the third bar showed a lower high, he placed a trailing stop a penny above the prior bar's high and lowered it as the next bar

appeared.

At G, the stock touched his trailing stop and closed out the trade at 11.72 for a gain of $1.78 or 13% in about 3 weeks. Using this technique of trailing the stop lower, he was able to exit at a more favorable price (11.72 versus 12.18).

73
Wedges, Falling



RESULTS SNAPSHOT

Appearance: A downward price spiral bounded by two converging, down-sloping trendlines.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Intermediate-term bullish continuation	Short-term bullish reversal
Performance rank	31 out of 39	12 out of 20
Breakeven failure rate	26%	24%
Average rise	38%	26%
Volume trend	Downward	Downward
Throwbacks	62%	61%
Percentage meeting price target	62%	53%
Synonym	Descending wedges	
See also	Pennants	

Downward Breakouts

	Bull Market
Reversal or continuation	Short-term bearish continuation
Performance rank	27 out of 36
Breakeven failure rate	29%
Average drop	14%
Volume trend	Downward
Pullbacks	74%
Percentage meeting price target	29%

The Results Snapshot shows the important numbers for falling wedges. When compared to other chart patterns, the failure-rate rank (not shown) is very high (bad). Bear markets, for example, rank 19 out of 20, where a rank of 1 is a pattern with the fewest failures.

The average rise or decline is also unexciting with mid-to-lower-list performance. Coupled with their rare appearance and the difficulty in spotting these patterns in the bush, falling wedges are beasts you probably will not want to trade. Still, they can come in as handy as metric wrenches to a mechanic.

I did a frequency distribution of the breakout distance to the wedge apex and found that the best performers in bull markets had upward breakouts 50% to 80% of the way to the apex, with rises averaging 42%.

However, even though a falling wedge may have a breakout 60% of the way to the apex, it does not mean you will see a 42% rise. Since we are dealing with probabilities, anything can happen (including you doing even better), but the statistics suggest a more powerful move.

The percentage meeting the price target (that is, the measure rule) for upward breakouts uses the highest high in the wedge as the target—an easy objective because there's no calculation involved, but the stock will struggle to meet it.

For downward breakouts, I use the pattern's height subtracted from the breakout price. That method is why downward breakouts rarely hit their targets (just 29% do). Cut the height in half and subtract it from the breakout price and it'll boost the success rate to 47%. That's still not great.

Tour

Figure 73.1 shows a falling wedge bounded by two down-sloping trendlines in the middle of the chart. Price made a new low in late July and bounced upward. The upward momentum did not carry quite as far as the prior swing. Another up-and-down swing occurred during mid-August just before price finally reached a new low.

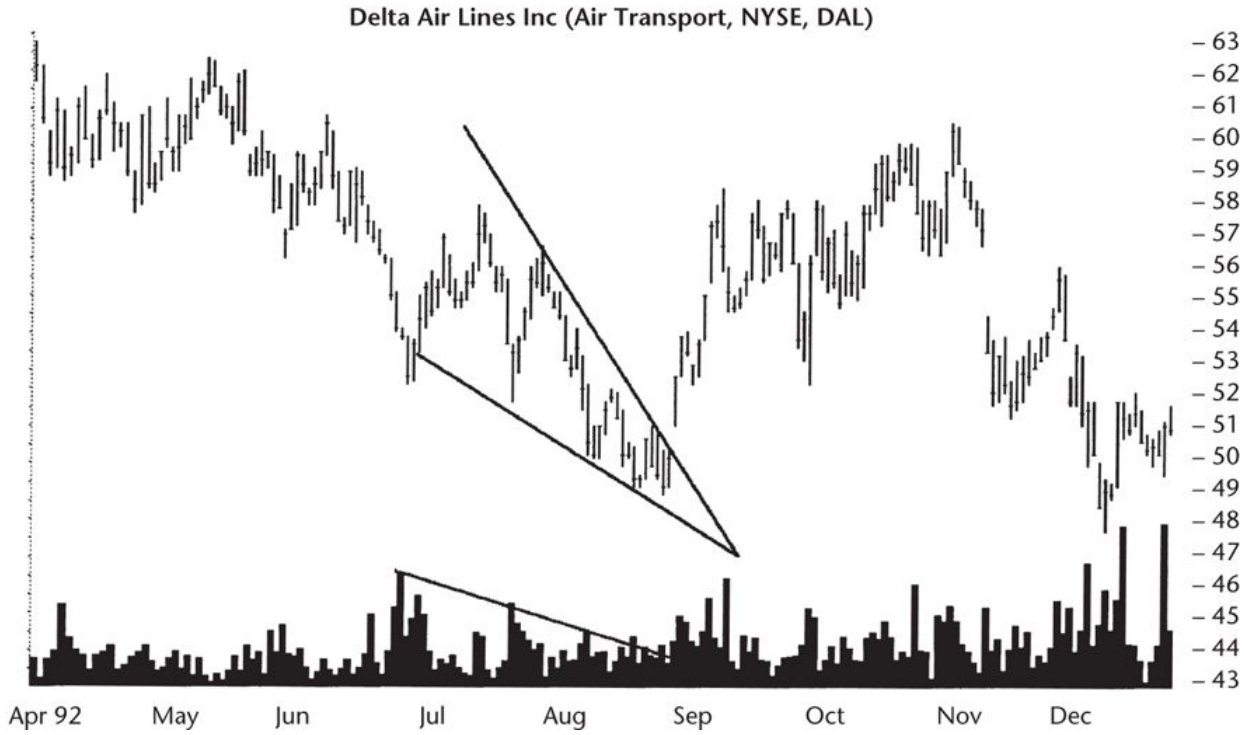


Figure 73.1 A falling wedge bounded by two down-sloping trendlines.

If you draw a trendline along the bottoms of the minor lows and another along the tops, you see the familiar shape of a falling wedge.

Falling wedges are rare patterns that have price movements bounded by two down-sloping and converging trendlines. When drawn on the chart, the picture looks like a pie slice tilted downward. I'm getting hungry for a pecan pie, but I digress.

Once price breaks out upward, it rises and quickly climbs above the top of the pattern in well-behaved wedges.

Identification Guidelines

Table 73.1 shows identification guidelines. I don't know what it is about wedges, but they are a pain to find. Let's go through the identification guidelines.

Appearance. As mentioned before, two trendlines outline the price action. Both trendlines slope downward, with the top trendline having a steeper slope than the bottom one. That forces the lines to converge.

Eventually, the two trendlines intersect at the wedge apex. You can see this in the wedge pictured in Figure 73.2. This wedge forms as part of a consolidation pattern in an uptrend. Price bounces from one trendline to the other several times before breaking out of the narrowing price pattern in mid-June.

Table 73.1 Identification Guidelines

Characteristic	Discussion
Appearance	Draw two trendlines, one along the minor highs and one along the minor lows. The trendlines must both slope downward and eventually converge. Price should cross the pattern from top to bottom several times, filling the space with price movement.
Multiple touches	Wedges should have at least five touches, three along one side and two along the other. Be skeptical of wedges with fewer than five touches.
Volume	Volume usually trends downward until the breakout.
Breakout direction, confirmation	Price can break out either upward or downward, but is usually upward. A breakout happens when price closes outside of the trendline boundary.
Duration	A falling wedge has a minimum duration of 3 weeks. Anything less is probably a pennant. Wedges rarely exceed 4 months long.

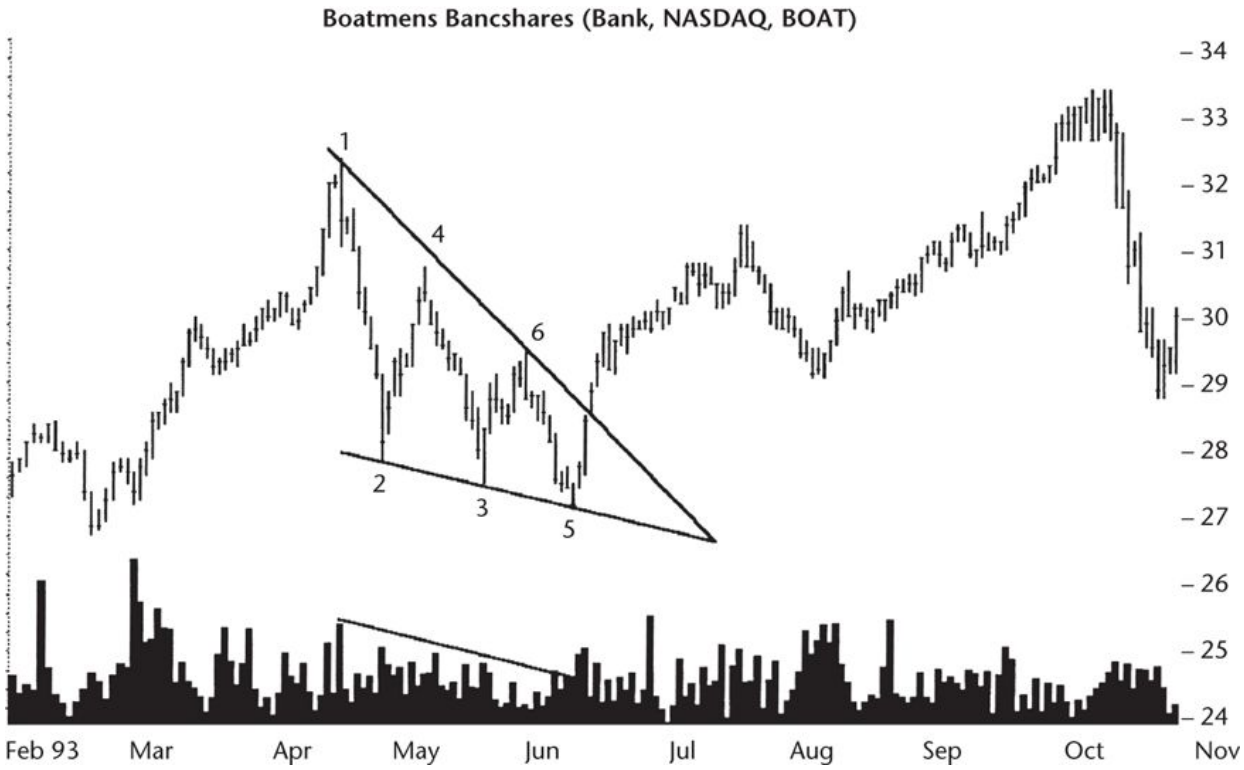


Figure 73.2 A falling wedge with six trendline touches. Several alternating touches of the trendlines are needed to form a reliable falling wedge.

Multiple touches. I usually regard five touches as the minimum necessary to safeguard a good chart pattern. The reason for the multiple touches is that the price pattern creates several minor highs and minor lows, each succeeding one narrower than the last. Having a five-touch minimum prevents a price pattern that resembles a rise and gradual decline from being labeled as a wedge.

There needs to be several opposing touches of the trendline as price progresses through the wedge. For example, the figure shows six touches of the trendlines, each of which occurs on the opposite side of the previous touch (but need not alternate).

Look for at least three touches of one trendline and two on the other, all of them as minor highs or minor lows. Cutting through price doesn't count as a touch. The stock should cross the wedge from top to bottom, filling the whitespace with price movement.

Down-sloping trendlines outlining the minor highs and lows are another key to correct identification of a falling wedge. Avoid a

horizontal or near-horizontal bottom trendline because the formation is most likely a descending triangle. For a falling wedge, both trendlines *must* slope downward.

Volume trend. The volume trend is usually downward. This is not an inviolate rule; it is only a guideline that usually rings true.

Breakout direction, confirmation. The breakout can be upward or downward, and it happens when price closes outside of the trendline boundary. In this example, price breaks out upward in mid-June and reaches the ultimate high in early October. The rise, at 17% from the breakout, is well below average.

Duration. The wedge should have a minimum duration of 3 weeks, and seldom does it last longer than 4 or 5 months. The wedges in this study, for example, have durations from 3 weeks to about 11 months. Durations shorter than 3 weeks are probably pennants (if they have a flagpole).

Why do falling wedges act as they do? About half of the wedges act as consolidations of the prevailing price trend. Like the wedge shown in the figure, price is heading upward when it runs into turbulence. Investors pause from their buying spree and sit on the sidelines. Price retraces its rise by creating the wedge, oscillating in ever-narrowing spirals until buying enthusiasm resumes.

Volume shows this lack of enthusiasm when it recedes. When buying momentum resumes, price and volume shoot upward again after the breakout.

Think of a falling wedge not as a pattern of weakness, but one of strength, like a spring winding tighter and tighter. As a spring tightens, it shrinks, and so do price and volume in the falling wedge. During a breakout, the pent-up force releases and price bursts through the pattern's boundary and zooms upward (or downward).

Focus on Failures

Like many chart patterns, falling wedges suffer from 5% failures (see **Figure 73.3**). Although not shown on the chart, price began rising in early December 1994. During creation of the chart pattern, price moved lower in a narrowing channel.

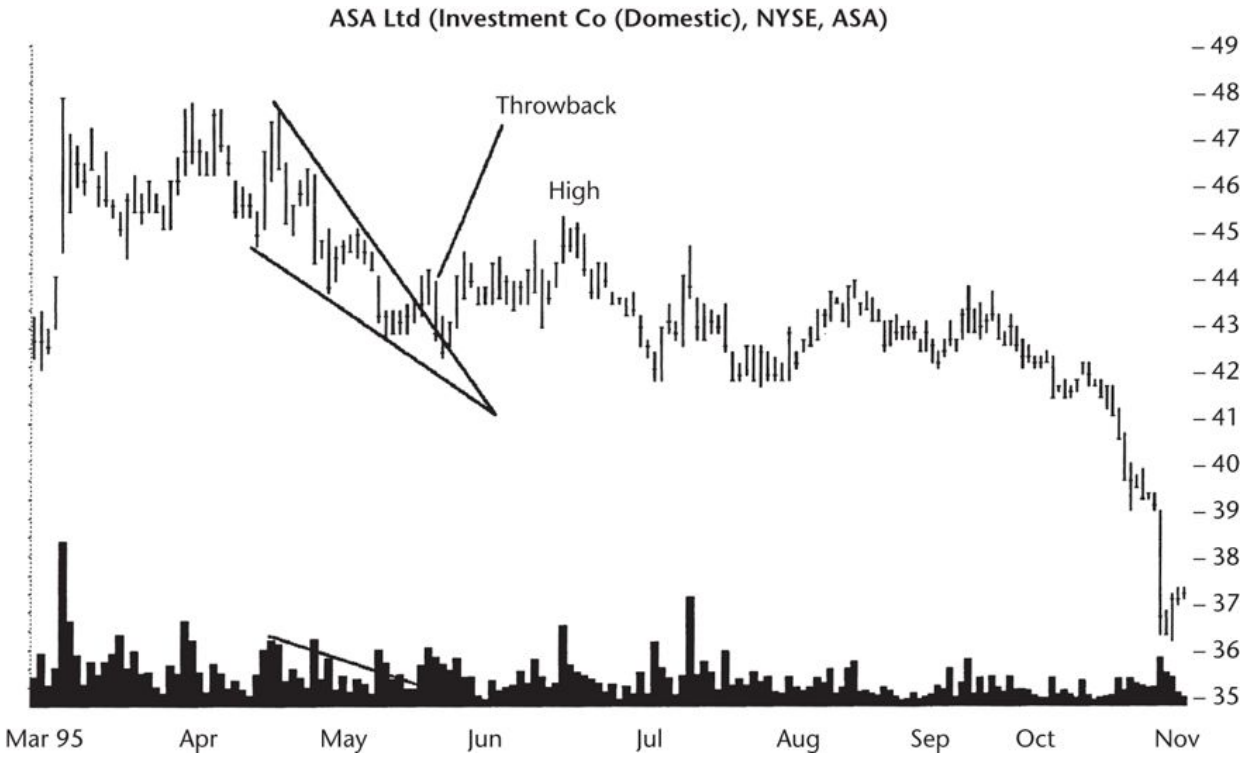


Figure 73.3 An example of a falling wedge 5% failure. Price does not move more than 5% above the breakout point before heading down again.

After the breakout, price climbed and reached a high of 45.38, less than 5% above the breakout price of 43.25. From the high, price headed down and fell to a low in late October of 36.38. The inability of price to continue rising more than 5% after the breakout constituted a 5% failure.

The causes of 5% failures can be many. Overhead resistance, as in this case, blocked the upward rise, so be sure to check for resistance before trading. For downward breakouts, look for nearby underlying support that may halt a decline.

Other causes may include a sharp drop in the stock market—that can keep an industry down for months (think of airline stocks after the tragedy of September 11, 2001, or during the Covid-19 pandemic in 2020). Certainly, a switch from bull markets to bear markets will tend to keep high-flying stocks cruising at a lower altitude, but even a short decline in the market can cause havoc.

Rising commodity prices can affect the stock market, too. For example, natural gas and oil prices affect airlines, chemicals, utilities, oil companies, oil service companies, refiners, and so on.

The Federal Reserve raising interest rates to slow the economy may push it into a recession. The prospect of rising rates is never a good omen for stocks, and they often react badly to the news.

After you enter a trade, do you cash out quickly, savoring a short-term profit? Do you hold on for the long term and weather the loss? The answer to these questions you should know before trading. Switching your attitude to a long-term holding as price drops in a short-term trade is a game best left to amateurs. They are the ones who ride a position down and sell just before it bottoms.

Statistics

Table 73.2 shows general statistics.

Number found. I found 1,168 wedges in my house and called the exterminator. They were in 651 stocks with the first found in July 1991 and the most recent in December 2018. Not all stocks covered the entire range, and some no longer trade. Because bear markets with downward breakouts were below the minimum threshold for this edition, they are not included in the statistics. Those are the ones the exterminator handled.

Reversal (R), continuation (C) occurrence. Wedges split almost evenly between reversals and continuations of the price trend. Bull markets tended to see a few more patterns act as continuations. Bear markets favored reversals.

Reversal/continuation performance. There's not a lot of difference between reversal and continuation performance in this chart pattern.

Average rise or decline. The average rise and decline are below the average performance of all chart pattern types. Today's headline: This chart pattern underperforms.

Standard & Poor's 500 change. Notice the effect the market has on the average rise or decline. When the market and breakout direction agree (bull market, upward breakout), the average rise tends to be larger than the countertrend move (bear market, upward breakout). That would be clearer with the missing bear market, down breakout column.

Days to ultimate high or low. The rise in bear markets is 30% faster than the rise in bull markets (you find that by taking the ratio of gain to time). The downward breakout in bull markets drops at the same speed as the bull market rises. In other chart patterns, we see bear market velocity about twice as fast as in bull markets.

Table 73.2 General Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Number found	583	176	277
Reversal (R), continuation (C) occurrence	49% R, 51% C	52% R, 48% C	42% R, 58% C
Reversal, continuation performance	38% R, 39% C	27% R, 25% C	–13% R, –14% C
Average rise or decline	38%	26%	–14%
Standard & Poor's 500 change	10%	2%	–1%
Days to ultimate high or low	160	82	59
How many change trend?	46%	47%	27%

How many change trend? This is a count of how many wedges see price move more than 20% after the breakout. For upward breakouts, I like to see values above 50%, but wedges can't meet that benchmark (but two columns come close). Even downward breakouts fall short of the average posted by other chart pattern types.

What does this mean? Let me tell you. I was hoping this row would separate patterns that trend from those that do not. Perhaps it does. We already know that wedges underperform, so this is another statistic that confirms that poor performance.

Table 73.3 shows failure rates for falling wedges. The best performance (fewest breakeven failures) comes from wedges in bear markets with upward breakouts (which is odd because it's a countertrend move). Even so, 24% of wedges failed to see price rise more than 5%. Notice how small the sample counts are. *Hmm*. Maybe that explains the lower failure rate.

Here's another example: 38% of wedges failed to see price rise more than 10%. Notice that at this level, bull markets have a slightly smaller failure rate, 37%. The two columns argue over which has the lower failure rate as you scan down the list. Bull markets with upward breakouts eventually win, though.

Here's how to use this table. Suppose you find a falling wedge that peaks at 15 and spirals down to 10, where price breaks out upward in bull markets. Since the measure rule says to expect a climb back up to the top of the wedge, what are the chances of that happening?

A climb from 10 to 15 is 50%, and the table shows that 76% fail to climb above that. Thus, the measure rule is too optimistic, and price is unlikely to reach the top of the pattern before tumbling more than 20%.

Table 73.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
5 (breakeven)	150 or 26%	42 or 24%	81 or 29%
10	63 or 37%	25 or 38%	59 or 51%
15	69 or 48%	18 or 48%	43 or 66%
20	32 or 54%	8 or 53%	18 or 73%
25	27 or 58%	16 or 62%	18 or 79%
30	25 or 63%	12 or 69%	24 or 88%
35	26 or 67%	8 or 73%	15 or 93%
50	53 or 76%	19 or 84%	13 or 98%
75	59 or 86%	15 or 93%	6 or 100%
Over 75	79 or 100%	13 or 100%	0 or 100%

Table 73.4 shows breakout-related statistics.

Breakout direction. The falling wedge favors upward breakouts as the table shows, but they occur most often in bull markets.

Yearly position, performance. The numbers for this row have little consistency. Upward breakouts suggest you avoid those within a

third of the yearly high. Downward breakouts dislike the middle third of the yearly price range.

Apex distance. The median breakout occurs between 58% and 62% of the way to the apex. As I mentioned earlier, the most powerful upward breakouts in bull markets (only) occur between 50% and 80% of the way to the apex. Those falling within that range have rises that average 42%. I measured time using calendar days, not trading days, by the way.

Table 73.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Breakout direction	68% up	57% up	32% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 39%, M 39%, H 38%	L 27%, M 26%, H 24%	L –15%, M –12%, H –15%
Median breakout distance to apex	62%	58%	61%
Throwbacks/pullbacks occurrence	62%	61%	74%
Average time to throwback/pullback peaks	4% in 5 days	7% in 5 days	–5% in 6 days
Average time to throwback/pullback ends	11 days	12 days	12 days
Average rise/decline for patterns with throwbacks/pullbacks	29%	19%	–12%
Average rise/decline for patterns without throwbacks/pullbacks	54%	37%	–18%
Percentage price resumes trend	53%	44%	43%
Performance with breakout day gap	53%	25%	–14%
Performance without breakout day gap	35%	27%	–14%
Average gap size	$0.25	$0.29	$0.68

Throwbacks and pullbacks. In other chart patterns, throwbacks and pullbacks happen about 66% of the time, but upward breakouts fall short of that and downward breakouts exceed that.

It takes about a dozen days for the stock to return to the breakout price on average.

In all cases, throwbacks and pullbacks hurt performance when they occur. That's typical for chart patterns, but what's not typical are the differences in performance, which are quite large.

After a throwback or pullback completes, it's nearly random whether the stock will resume trending in the breakout direction. The uptrend resumes in bull markets but not in the other two columns.

Gaps. Gaps in wedges don't show a consistent performance trend either. They help performance in bull markets after upward breakouts, hurt performance in bear markets, and don't care after downward breakouts. That covers all three possible combinations.

Table 73.5 shows pattern size statistics.

Height. Tall patterns perform better than short ones regardless of market conditions or breakout directions. To use this finding, measure the height of the wedge from highest peak to lowest valley and divide by the breakout price. If the result is larger than the median shown in the table, then you have a tall wedge.

Width. Wide patterns perform better than narrow ones. For reference, I used the median length to determine whether a wedge was narrow or wide. I provide those median values in the table for your viewing pleasure.

Height and width combinations. Wedges both tall and wide outperform across the table. This is surprising because falling wedges are one of the few chart patterns to show no exceptions. You'll want to avoid trading short and narrow ones, too.

Table 73.5 Size Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Tall pattern performance	41%	34%	–15%
Short pattern performance	35%	18%	–13%
Median height as a percentage of breakout price	15.0%	22.6%	16.1%
Narrow pattern performance	37%	20%	–13%
Wide pattern performance	40%	33%	–15%
Median width	38 days	36 days	45 days
Short and narrow performance	35%	15%	–13%
Short and wide performance	36%	26%	–13%
Tall and wide performance	42%	35%	–15%
Tall and narrow performance	40%	32%	–14%

Table 73.6 shows volume-related statistics.

Volume trend. Most wedges have a receding volume trend. Don't throw away a wedge just because volume trends upward in the pattern. Why?

Rising/Falling volume. Answer: In bull markets, after upward breakouts, patterns with rising volume tend to outperform. The other two columns prefer falling volume, so check to be sure which column you're using.

Breakout day volume. Heavy breakout volume propels the stock higher after upward breakouts, but light breakout volume works best for downward breakouts. That's what the numbers tell me.

Table 73.7 is supposed to show how often price reaches a stop location, but the method used to calculate stops doesn't work with this chart pattern, so I removed it (the exterminator carried away the table, too, along with the bearish patterns).

Table 73.8 shows performance over three decades. The bear markets of the 2000s were not included in the statistics.

Table 73.6 Volume Statistics

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Volume trend	72% down	70% down	75% down
Rising volume trend performance	42%	22%	–12%
Falling volume trend performance	37%	28%	–14%
Heavy breakout volume performance	40%	31%	–13%
Light breakout volume performance	36%	19%	–15%

Table 73.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	34%	–16%
2000s	47%	–11%
2010s	32%	–15%
Performance (above), Failures (below)		
1990s	22%	25%
2000s	25%	32%
2010s	33%	30%

Performance over time. The 2000s showed the best performance (upward breakouts), and the other two decades were about even for performance. Downward breakouts showed the worst performance in the 2000s, and the other two decades were similar.

That makes sense to me. If upward breakouts excel in the 2000s, then downward breakouts probably do worse. And that's what we see.

Failures over time. Upward breakouts show failures increasing over time but downward breakouts show a mix.

Table 73.9 shows busted pattern performance.

Busted patterns count. As poor as wedges perform, I would expect to see higher bust counts (like 40% to 50%).

Busted occurrence. I sorted the busts into how many times they busted. We see single busts happening most often followed by double busts (in two columns) or triple+ busts (meaning more than two busts) after downward breakouts.

Busted and non-busted performance. In two of three columns, busted patterns outperform their non-busted counterparts. If you see a falling wedge with a busted downward breakout, then look for nearby (within 10% or so) overhead resistance. If you find none or a small amount, then consider buying the stock. If it single busts, the rise averages 53%, which is large enough that maybe you can grab part of it. The number is an average of perfect trades, so keep that in mind.

Note that for a downward breakout to bust, price has to drop no more than 10% below the bottom of the wedge and then close above the top of it. To clear the top of the wedge, that often means a big rise. I measured the 53% average rise from the top of the wedge (not the upward breakout) to the ultimate high.

Table 73.9 Busted Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Busted patterns count	182 or 31%	42 or 24%	89 or 32%
Single bust count	88 or 48%	26 or 62%	63 or 71%
Double bust count	72 or 40%	10 or 24%	3 or 3%
Triple+ bust count	22 or 12%	6 or 14%	23 or 26%
Performance for all busted patterns	–15%	–17%	39%
Single busted performance	–21%	–23%	53%
Non–busted performance	–14%	–20%	38%

Trading Tactics

Table 73.10 shows trading tactics.

Measure rule, targets. For upward breakouts, the target price is the highest high in the wedge. For downward breakouts, calculate the height of the wedge from tallest peak to lowest valley and subtract the height from the breakout price. If the target is below zero, then ignore it. If the target is a large percentage away, then price will likely miss the target.

The bottom portion of the table shows how often price reaches the full height target. For downward breakouts, you might want to divide the height in half before subtracting it from the breakout price. If you do that, price reaches the target 47% of the time. That's still not great.

Once you have a target picked, compute the percentage distance between the target and the current price. Then use Table 73.3 to determine how likely it'll be for price to exceed the target.

For example, if the target is $5 away from a current price of 50, that's a 10% move. In bull markets, after upward breakouts, Table 73.3 says that 37% of wedges will fail to drop more than 10%. If you're a glass-half-full person, then that leaves 63% of patterns will reach the target.

Figure 73.4 shows an example of how this works. The highest price is just as the formation starts in early June at 48.63, and it becomes the target price. After the breakout, price hesitates and attempts a throwback to the wedge trendline, but cannot quite reach it. After that, it is straight up.

Table 73.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	For upward breakouts, the highest high in the wedge is the price target. For downward breakouts, use the formation height subtracted from the breakout price as the target. The lower portion of the table shows how often this works.
Buy after breakout	Since price can break out in any direction, wait for a close outside the trendline boundary before taking a position.
Watch for dip	A substantial number of wedges break out downward but turn up and make a large rise.
Busted trade	See Table 73.9 for guidance.

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout
Percentage reaching full height target	62%	53%	29%

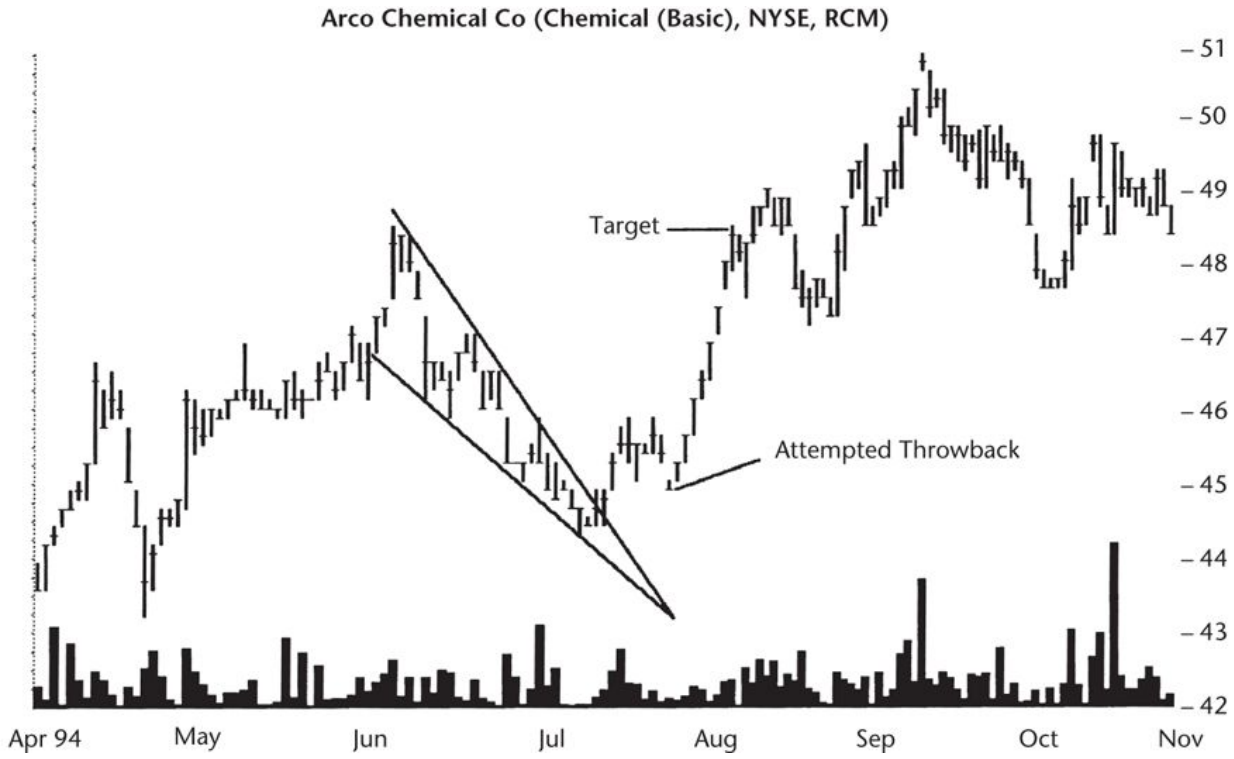


Figure 73.4 The highest price in the wedge becomes the target price to which the stock will climb at a minimum.

Price reaches the target in early August. The old high is a place of resistance, and it takes about 2 weeks before price is able to push decidedly above that level. Price moves higher until hitting 51 before stumbling and entering an extended downtrend.

Buy after breakout. Two out of every three (68%) wedges break out upward in bull markets, but you may stumble upon one that breaks out downward. Wait for price to close outside the trendline boundary to signal the breakout. Only then should you trade the wedge, and with such poor performance you may be wise to skip the trade entirely. You may run into a dip, too. They are painful.

Watch for dip. As I was researching wedges, I noticed an interesting quirk. Sometimes price drops below the bottom trendline, circles around, and then rises. Figure 73.6 shows an example of this behavior. In early January, price breaks out downward, circles around, and then moves higher.

Sometimes the downward breakout takes the form of a premature downward breakout. Price might drop below the trendline for a few

days and then reenter the wedge only to zoom out the other side and stage an upward breakout. In either case, the real action is upward. Over a quarter (27%) of all falling wedges show this momentary downward spin.

Busted trade. As I mentioned in the discussion of Table 73.9, busted downward breakouts can be profitable trades. Just remember that price has to close above the top of the wedge to bust the downward breakout. The results you see in that table are for many perfect trades.

Experience

Let me tell you about what I found in my trade review.

Millennium Pharmaceuticals

I only traded a falling wedge once from the sell side. That was in Millennium Pharmaceuticals (MLNM) in 2005. I bought a rounding bottom (or descending scallop) after price started moving up.

Instead of rising the stock reversed and formed a falling wedge. From my notebook: “Sell reason: This broke out downward from a falling wedge, so it was time to leave. The stop was too far away on this one, initially. Coupled with bad timing on the sale ... ugh.”

The wedge saw price curl around the apex and move higher after I sold. As I mentioned, this dip happens sometimes, but not before taking 12% of my money.

- Lesson: The initial stop was placed 14% away from the buy price, which was too far. The adverse breakout from the falling wedge narrowed the loss somewhat but it was still too far away.

Ben and Jerrys A

On the buy side, I took a position in Ben and Jerrys A (BJICA) in late 1999 after the stock formed a falling wedge. This one had the same curl as I just described for MLNM except I bought when price was rebounding after it rose past the apex. The stock climbed for a week and then started heading lower. It made a strong drop, pushing price back below the apex when I sold.

My notes say this was a perfect entry and exit. I executed it well, and price just didn't cooperate. That happens.

- Lesson: Even well-executed trades fail. It's the cost of doing business, and traders have to become accustomed to having losing trades.

Freeport-McMoRan Copper and Gold

Figure 73.5 shows a trade I made in Freeport-McMoRan Copper and Gold (FCX) in 1999. The stock completed a falling wedge (A). At B, the stock broke out upward, and I grabbed it the same day, receiving a fill at 5.25. Within a week, the stock had thrown back to the breakout price and bottomed at C.

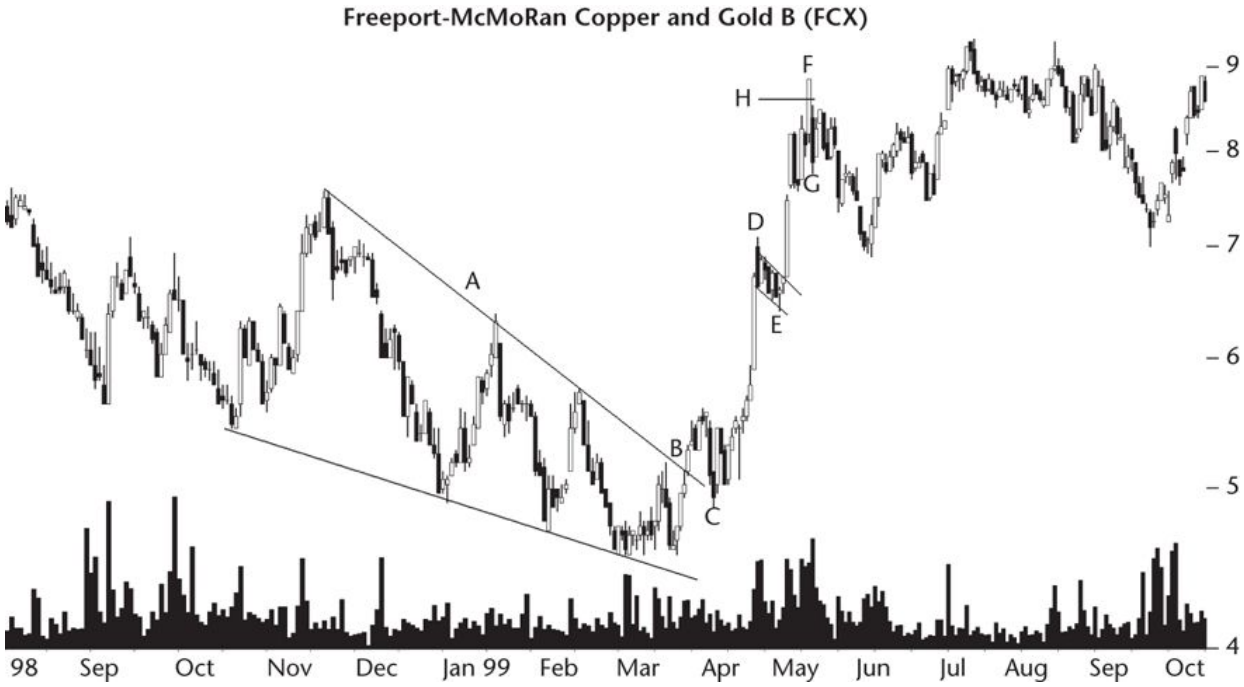


Figure 73.5 This falling wedge trade made 51%.

Then it made a strong push higher to D. I don't have a reason to explain this strong upward move. It could have been an earnings release that was better than expected, or it could have been something else.

Regardless, the stock retraced and formed a very nice-looking flag, E. The flag broke out upward.

I calculated a price target. The low at C was 4.88 and the high at D was 7.09 for a flagpole height of 2.21. I added this to the bottom of the flag, E (6.41), to get a target of 8.62 (H).

The stock reached the target at F, and I sold the next day, G, but only received a fill at 8.00. I made 51% on the trade.

I entered on the breakout, sold the day after the stock reached the target, and made a bundle. This is how falling wedges are supposed to work but rarely do.

Sample Trade

Clint is the CEO of a small company that specializes in software for chambers of commerce. It is a cutthroat business because market growth is limited. The only way to increase revenue is to take business away from a competitor or eat them. Once a company entrenches itself within a chamber, it is almost impossible to pry them loose. But Clint has had some success because of the breadth of his offerings and some skilled marketing ploys.

When Clint is not worrying about his business or pitching his wares to prospective customers, he plays the stock market hoping to make enough extra income to someday buy out his closest competitor. He added multimedia to his demo, and that's what alerted him to the company shown in **Figure 73.6**.

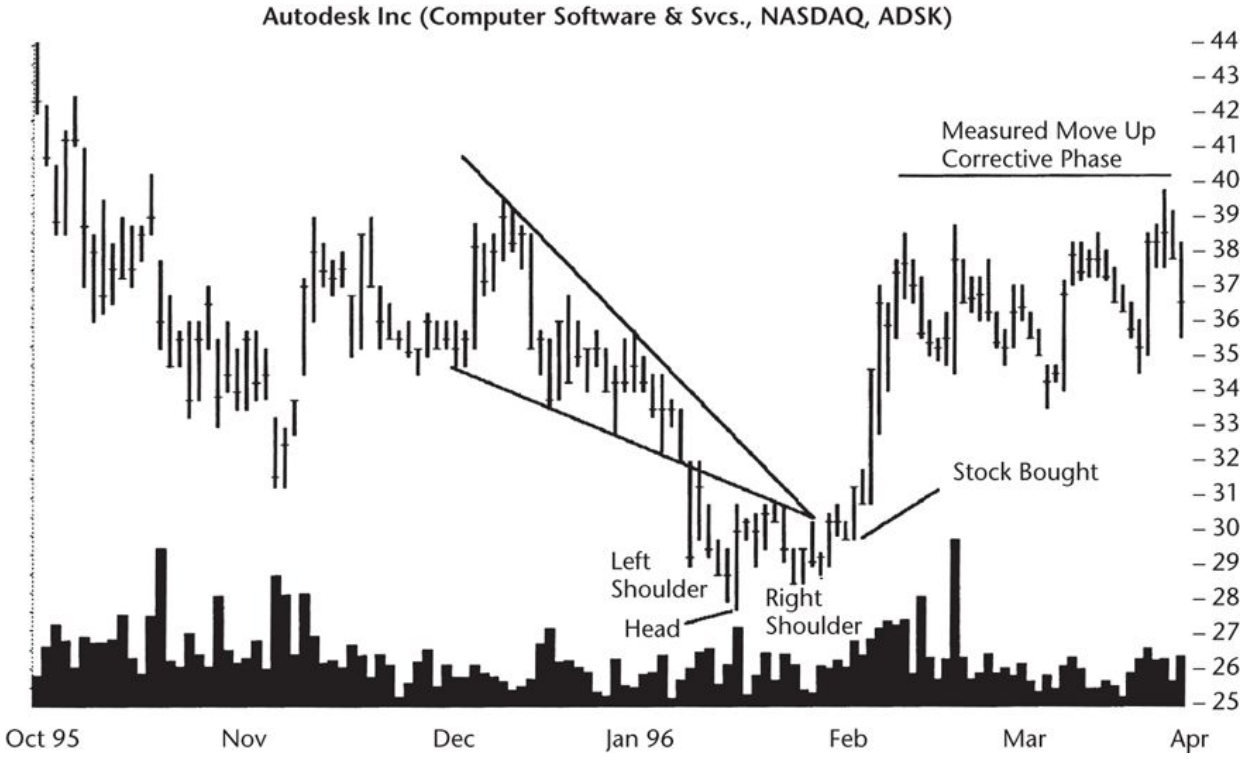


Figure 73.6 More than one-fourth of falling wedges drop below the bottom trendline and then quickly turn up and head higher. A small head-and-shoulders bottom appears as price swings around the apex.

Clint watched the stock stumble and then saw the falling wedge form. He hoped that the new chart pattern marked the limit of the

downward move and that he could buy in at a good price with a mouthwatering chance of price rising to the old high.

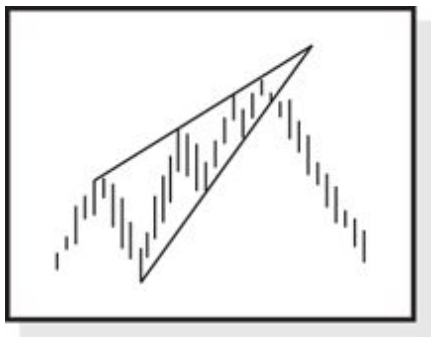
When the stock punched through the bottom wedge trendline, he waited to see what price would do next. It curled around and made a mini-head-and-shoulders bottom. He penciled in a neckline joining the armpits between the two shoulders, which followed the slope of the lower wedge trendline.

Once price pushed above the neckline and above the wedge apex, “I placed an order to buy. It filled at 30.” Clint's timing was excellent. Two days after he bought, price was already in the mid-thirties and climbing. He saw price go horizontal in mid-February through March and wondered if this was the corrective phase of a measured move up chart pattern. That is the way he decided to play it.

The base of the measured move was at the head, 27.75, and the top of the corrective phase was at 38.50. The height was the difference between the two or 10.75. Projecting the height upward from the corrective phase bottom of 33.50 gave him a target of 44.25. He phoned his broker and placed a limit order to sell his holdings at that price.

In mid-April the stock left the corrective phase and started climbing again on the second leg up. In late April, an e-mail message from his broker told him price reached his target, and the stock sold at 44.25. In the days that followed, he smiled at his luck. Not only did he hit the high exactly, but the stock tumbled below 30 by the start of July.

74
Wedges, Rising



RESULTS SNAPSHOT

Appearance: An upward price spiral bounded by two converging, up-sloping trendlines.

Upward Breakouts

	Bull Market
Reversal or continuation	Long-term bullish continuation
Performance rank	32 out of 39
Breakeven failure rate	19%
Average rise	38%
Volume trend	Downward
Throwbacks	72%
Percentage meeting price target	63%
Synonym	Ascending wedges
See also	Pennants

Downward Breakouts

	Bull Market	Bear Market
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	36 (last) out of 36	19 (last) out of 19
Breakeven failure rate	51%	28%
Average drop	9%	17%
Volume trend	Downward	Downward
Pullbacks	72%	70%
Percentage meeting price target	32%	42%

I received an e-mail asking if the S&P 500 index was making a rising wedge. I pulled up the chart and, sure enough, the wedge was as plain as day and almost a year long. In my daily review of stock charts, I missed finding this one. That is the major problem with wedges, whether rising or falling. You cannot find them. Not only are they rare, but also their spiraling price action seems hidden in a historical price series. A few stand out and shout “rising wedge,” like the ones shown in the figures accompanying this chapter, but most remain hidden like a raindrop joining a pond.

The Results Snapshot gives you the bad news. Rising wedges are lousy performers. Downward breakouts rank dead last for performance, both in bull and bear markets. Can you imagine a pattern where half of them (51%) will fail to see price drop more than 5%? That's alarming.

Are there no redeeming qualities? Yes, there are. Downward breakouts that bust in bull markets might be worth a look. We'll discuss that later. But first, let's take a tour so we know what to avoid.

Tour

Figure 74.1 shows an example of a rising wedge. Price started a slow climb, like stairs going up, in October. The minor highs bounced off a trendline drawn along the peaks connecting them. On the bottom, an up-sloping trend supported the minor lows. The entire pattern saw price moving higher but forming a needle or wedge shape. The receding volume trend bolstered the case that the pattern was indeed a rising wedge.

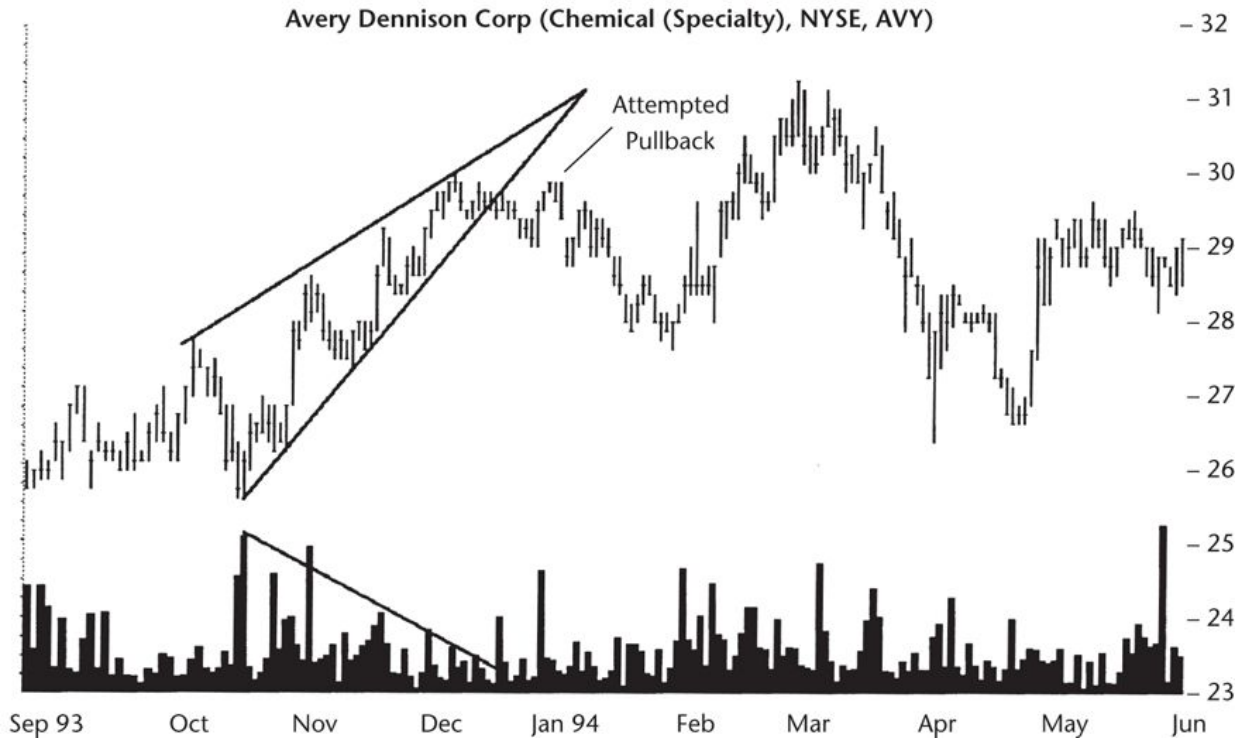


Figure 74.1 A rising wedge with two up-sloping trendlines. The volume trend usually slopes downward.

During mid-December, price did not break down out of the wedge so much as just meander lower. There was high volume on December 16, which probably marked the actual breakout, but it only lasted 1 day.

Price attempted a pullback to the lower wedge trendline but did not quite make it. Price moved lower, recovered to post a new high, and then withdrew to make another minor low during April before zipping higher.

Notice how price crossed the pattern from top to bottom several times, and how the pattern raises a wall of worry as price climbs,

getting narrower and narrower until it's forced to break out in one direction or the other.

Identification Guidelines

Rising and falling wedges are among the most difficult chart patterns to find. However, there are some guidelines that can make identification easier, and **Table 74.1** lists them.

Rising wedges can form anywhere. You might expect them to form at the end of a long uptrend and that is indeed the case most of the time. Occasionally, price is heading downward and a rising wedge forms as a retrace against the downward trend. After the breakout, price resumes falling.

Table 74.1 Identification Guidelines

Characteristic	Discussion
Appearance	Draw two trendlines, one along the minor highs and one along the minor lows. The trendlines must both slope upward and converge.
Multiple touches	Well-formed rising wedges have price touching the two trendlines at least 5 times (three on one side and two on the other). The touches should be at minor highs or minor lows, not when price slices through a trendline.
Whitespace	Price must cross the wedge from top to bottom plenty of times, filling the pattern with price movement, and not leaving a lot of whitespace behind.
Volume	Volume usually trends downward throughout the wedge.
Breakout direction	Can break out in any direction when price closes outside the trendline boundary.
Duration	A rising wedge has a minimum duration of 3 weeks. Anything less is a pennant, provided it is attached to a flagpole. Wedges rarely exceed 3 or 4 months long.

Appearance. Refer to the rising wedges pictured in **Figure 74.2** as I discuss the guidelines. You probably first notice the up-sloping trendlines. Both trendlines in the wedge must slope upward, and no

near-horizontal trendlines are allowed (a horizontal top trendline indicates an ascending triangle).

Price moves upward, forming higher highs and higher lows, but two trendlines bound the price action and converge. Rarely does price move outside the two trendlines until the final breakout.

Multiple touches. A well-formed rising wedge has multiple touches of the trendline boundaries. The figure shows the touches labeled 1 through 5. Fewer than five touches, three on one side and two on the other, should cast the wedge in a dim light. It might not be a rising wedge at all. Each trendline touch should be a minor high or minor low. If price slides through a trendline, then that location does not count as a touch.

In the figure, you'll notice that neither of the breakouts from the wedges qualify as a trendline touch.

Whitespace. You'll want to see price crossing the pattern from top to bottom plenty of times to cover the whitespace with price movement. Having too much whitespace means you made an identification mistake.

Volume. A receding volume trend is another element common to most rising wedges. Volume trends downward and becomes especially low just before the breakout. However, this is not an absolute rule.

If you suspect a wedge is forming but it has a rising volume trend, then ignore the volume trend. Review the other guidelines (especially the number of touches and whitespace) to make sure the chart pattern resembles a rising wedge. If there is doubt, do not invest until the stock breaks out of the chart pattern. Not trading a wedge until after the breakout is almost always a wise course of action for many types of chart patterns.

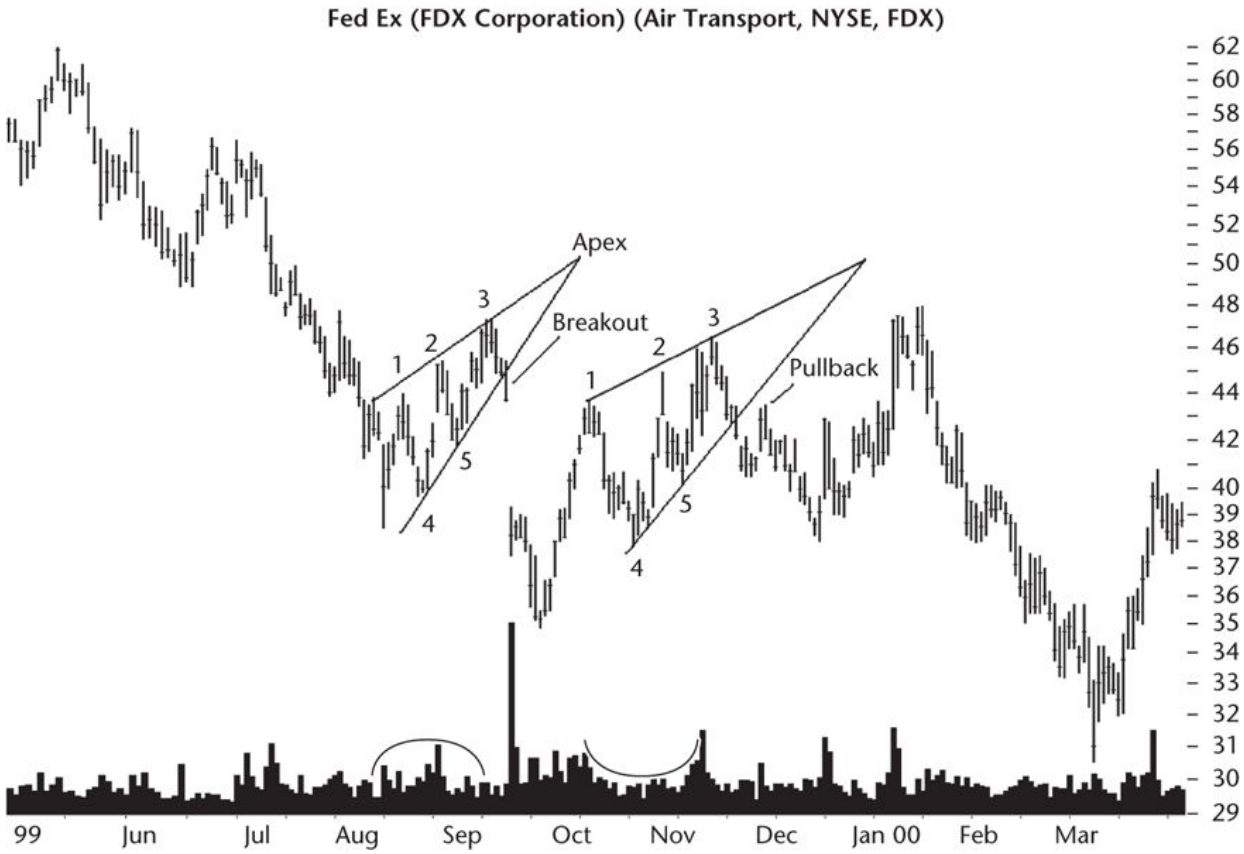


Figure 74.2 Shown are two rising wedges with at least five touches of the two trendlines.

Breakout direction. Price can break out in any direction but is downward most of the time. A breakout happens when price closes outside of the trendline boundary.

Duration. A rising wedge takes time to form. Price makes new minor highs and minor lows as it bounces from trendline to trendline. It takes over 3 weeks for the formation to take on the wedge appearance. Patterns shorter than 3 weeks are usually pennants provided they hang off flagpoles (I wonder if their fingers get tired from hanging on).

Typically, the apex—where the two trendlines meet—marks the end of the wedge. Price usually breaks out about two-thirds of the way to the apex (in calendar days, not trading days). Rising wedges rarely last more than 3 months, but be flexible. If you use the weekly scale to look for wedges, you'll likely find long ones.

Focus on Failures

With poor measure rule performance and a small average rise or decline, it should come as little surprise that rising wedges have failure rates higher than other chart pattern types. Consider **Figure 74.3**, a 5% failure in a rising wedge. Price that drops by less than 5% before moving significantly higher I call a 5% failure.

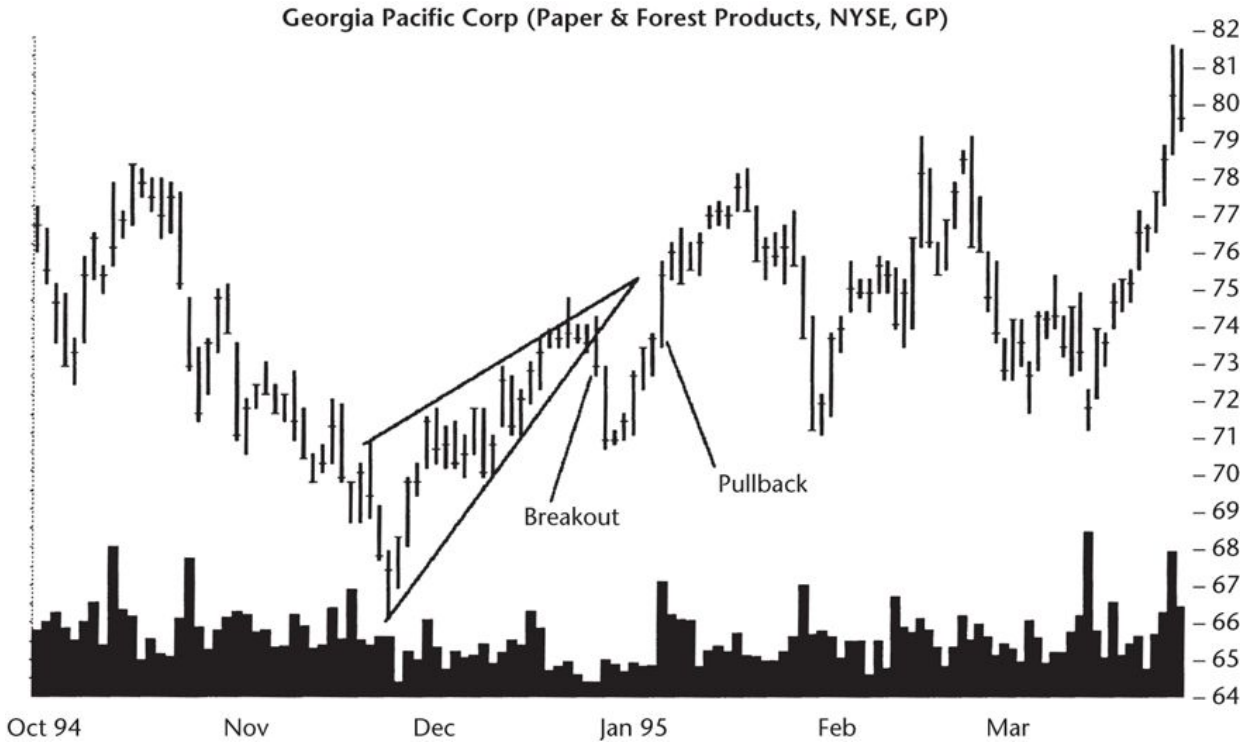


Figure 74.3 An example of a rising wedge 5% failure. Price fails to move down by more than 5% before rebounding.

The wedge forms after a downward price move of nearly 2 months' duration. The wedge appears to be an upward retrace in a short-term downward price trend. That's good for a downward breakout. It means price is likely to drop.

In the wedge, price moves up, touches the top trendline, and then bounces to the bottom. Price crosses from top to bottom as it rises and forms a narrowing price channel, just as we expect to see in a wedge.

Price drops out of the wedge 68% of the way to the apex in this example, right where you would expect it to. Volume is unusual

because it trends upward but begins receding the week before the breakout. It is exceptionally low just before the downward breakout.

Once price closes below the lower trendline, investors usually sell, helping drive price down. However, volume is low on this breakout. Price need not have high volume to recede; sometimes it can fall on its own weight.

If you shorted the stock after the downward breakout, you would have visited the woodshed for punishment, not because you did something wrong. Rather, because price turned around and headed higher. In less than 2 weeks, price climbed above the wedge top. In another 3 months, price finally broke out of its consolidation zone and really began climbing. In July, it reached a new high of over 95.

This rising wedge did not act as a continuation pattern (although technically it was). Rather, price fell into the pattern and turned higher just as the wedge formed. Even though the breakout was downward, the stock continued rising.

Statistics

Table 74.2 shows general statistics for rising wedges.

Table 74.2 General Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Number found	582	888	231
Reversal (R), continuation (C) occurrence	31% R, 69% C	69% R, 31% C	56% R, 44% C
Reversal, continuation performance	38% R, 38% C	–8% R, –11% C	–16% R, –18% C
Average rise or decline	38%	–9%	–17%
Standard & Poor's 500 change	13%	–2%	–9%
Days to ultimate high or low	256	31	39
How many change trend?	51%	15%	32%

Number found. The hunt for rising wedges over the decades found 1,820 patterns in 774 stocks with the first one located in July 1991 and the most recent in April 2019. Not all stocks covered the entire period, and some stocks no longer trade. I removed upward breakouts in bear markets because of too few samples.

Reversal (R), continuation (C) occurrence. Downward breakouts acted as reversals most often but upward breakouts favored continuations. That makes sense, doesn't it? (If price rises into the pattern, an upward breakout would be a continuation of that uptrend. A downward breakout would be a reversal).

Reversal/continuation performance. Mapping performance of patterns that acted as reversals or continuations shows that for

downward breakouts, continuations outperformed reversals.

You might think that's obvious because of the saying, “trade with the trend.” However, reversals outperform continuations after upward breakouts and continuations beat reversals after downward breakouts (for all chart pattern types).

Average rise or decline. The best performance comes from wedges that follow the market trend—upward breakouts in bull markets and downward breakouts in bear markets. Stick with those directions for trading and avoid the countertrend wedges, the ones that break out against the market trend. That's good advice for any chart pattern type.

Standard & Poor's 500 change. The index climbed or dropped the most in step with wedges that climbed or dropped the most. The best results occur in the trend-following columns, and the worst results in the countertrend columns.

Days to ultimate high or low. Downward breakouts see price bottom in about a month. Upward breakouts take considerably longer, about 8.5 months.

Here's one of the few joys I get from writing this book and that is to check the velocity of up and down breakouts. I compared the bull market numbers and found that downward breakouts see price drop twice as fast as it rises. Comparing downward breakouts in bull and bear markets, we see that bear markets see price drop 50% faster than bull markets. Way cool.

How many change trend? This is a measure of how many wedges see price move more than 20% after the breakout. I like to see bull market, upward breakout values over 50%, and the rising wedge qualifies. Downward breakout performance places dead last. It suggests you'll want to avoid shorting a wedge having a downward breakout (or avoid selling a long holding). Of course, your results may vary.

Table 74.3 shows failure rates for rising wedges, and it's not a pretty sight. You might want to avert your eyes.

Wedges in bull markets with upward breakouts have the lowest failure rates. That finding may sound odd because rising wedges are

supposed to break out downward and, presumably, that is the direction of best performance. But that's not what we see.

Table 74.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
5 (breakeven)	113 or 19%	456 or 51%	64 or 28%
10	76 or 32%	165 or 70%	44 or 47%
15	55 or 42%	80 or 79%	30 or 60%
20	41 or 49%	59 or 86%	18 or 68%
25	32 or 54%	39 or 90%	12 or 73%
30	32 or 60%	28 or 93%	14 or 79%
35	23 or 64%	30 or 97%	14 or 85%
50	64 or 75%	26 or 99%	24 or 95%
75	59 or 85%	5 or 100%	9 or 99%
Over 75	87 or 100%	0 or 100%	2 or 100%

Let's go through the numbers for the bull market, upward breakout column. I found that 19% of wedges fail to see price rise more than 5%. Thirty-two percent failed to see price rise more than 10%.

Look at the downward breakout numbers in bull markets. The failure rate starts at 51% and climbs to 70% the next row down. Over half of wedges won't see price drop more than 5%.

How do you use the table? Say your cost of trading is 5% and you want to make 10% on average, for a total of 15%. Which breakout direction and market condition will work best for wedges? Answer: wedges with upward breakouts in bull markets. They fail 42% of the time to rise more than 15%, but that is the best of the lot.

Table 74.4 shows breakout-related statistics.

Breakout direction. Wedges like to break out downward most often, regardless of market conditions (bull or bear).

Yearly position, performance. The best performers occur in the lowest third of the yearly price range in all three columns. You'll want

to avoid downward breakouts at high altitude, those with breakouts within a third of the yearly high. The air is so thin up there that parachutes don't work. I think they found that out by trying it. Rest in peace.

Apex distance. The breakout occurs 67% of the way to the wedge's apex. I was surprised at how consistent it was across all columns, so I checked my spreadsheet. The numbers are correct for the data I analyzed. The median is based on calendar days, not trading days in case you're wondering.

Throwbacks and pullbacks. Throwbacks and pullbacks happen a tad more often than we see in other chart pattern types (which is 66%). After price breaks out, it takes 11 or 12 days, on average, for the stock to return to the breakout price.

Table 74.4 Breakout and Post-Breakout Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Breakout direction	40% up	60% down	66% down
Performance of breakouts occurring near the 12-month low (L), middle (M), or high (H)	L 51%, M 33%, H 38%	L –11%, M –9%, H –8%	L –19%, M –18%, H –14%
Median breakout distance to apex	67%	67%	67%
Throwbacks/pullbacks occurrence	72%	72%	70%
Average time to throwback/pullback peaks	3% in 5 days	–4% in 5 days	–5% in 6 days
Average time to throwback/pullback ends	12 days	11 days	11 days
Average rise/decline for patterns with throwbacks/pullbacks	35%	–8%	–14%
Average rise/decline for patterns without throwbacks/pullbacks	46%	–13%	–23%
Percentage price resumes trend	75%	35%	51%
Performance with breakout day gap	40%	–9%	–17%
Performance without breakout day gap	38%	–9%	–17%
Average gap size	$0.38	$0.45	$0.29

In all columns, wedges showing throwbacks or pullbacks suffered worse performance, and the performance difference is wide, too. For

example, in bear markets, wedges with pullbacks saw price decline 14%. Without pullbacks, the decline measured 23%.

Gaps. Gaps on the day of the breakout helped performance but only in bull markets after upward breakouts. The performance difference wasn't big, either. Because of the way I measured performance with gaps (buying at the open the day *after* a gap), you can find a rising wedge with a gap, buy later, and still participate in the marginally better performance.

Table 74.5 shows pattern size statistics.

Height. Most of the time, tall wedges perform better than short ones. The lone exception is for wedges with upward breakouts in bull markets. Under those circumstances, height doesn't matter.

To determine if your wedge is tall or short, measure the height from highest peak to lowest valley (in the wedge) and divide it by the breakout price. If the result is greater than the median shown in the table, then you have a tall wedge.

Width. Wide wedges perform better than narrow ones in all cases except those in bull markets with downward breakouts that show no performance difference. For reference, I used the median length as the separator between narrow and wide, so refer to the values in the table.

Height and width combinations. Tall and wide patterns outperform in two of three columns. I wouldn't put a lot of confidence in the 50% rise for short and wide patterns in bull markets after upward breakouts. It might be accurate, but other types of chart patterns favor tall and wide as the best performing.

Table 74.5 Size Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Tall pattern performance	38%	–10%	–18%
Short pattern performance	38%	–8%	–15%
Median height as a percentage of breakout price	11.9%	13.7%	20.1%
Narrow pattern performance	33%	–9%	–16%
Wide pattern performance	43%	–9%	–17%
Median width	42 days	42 days	40 days
Short and narrow performance	32%	–8%	–15%
Short and wide performance	50%	–7%	–16%
Tall and wide performance	40%	–11%	–19%
Tall and narrow performance	34%	–9%	–18%

Table 74.6 Volume Statistics

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Volume trend	79% down	79% down	74% down
Rising volume trend performance	41%	−9%	−16%
Falling volume trend performance	37%	−9%	−17%
Heavy breakout volume performance	40%	−10%	−18%
Light breakout volume performance	34%	−9%	−16%

Table 74.6 shows volume-related statistics.

Volume trend. I used linear regression to show that most wedges have a falling volume trend.

Rising/Falling volume. The biggest performance difference is for wedges with rising volume in bull markets after upward breakouts. The other two columns don't see a statistically significant performance difference.

Breakout day volume. Again, upward breakouts in bull markets see a big performance difference. They favor heavy breakout volume as do the other columns.

I removed **Table 74.7** because the way I calculate how often stops trigger doesn't apply to wedges.

Table 74.8 shows the performance over three decades, but it only includes bull market statistics. The bear markets only happened in the 2000s, so I excluded them.

Performance over time. For upward breakouts, the 2000s showed the best performance and the 1990s showed the worst. Downward breakouts show performance deteriorating since the 1990s.

Table 74.8 Performance and Failures Over Time for Bull Markets

Description	Up Breakout	Down Breakout
1990s	31%	–13%
2000s	41%	–8%
2010s	39%	–7%
Performance (above), Failures (below)		
1990s	20%	33%
2000s	17%	55%
2010s	21%	61%

Failures over time. Want a cheap thrill? Look at how the failure rates climb after downward breakouts. The rise from 33% in the 1990s nearly doubled in the 2010s, to 61%. Both the 1990s and 2010s had only bull markets, so the two periods are comparable.

I looked at the Dow industrials over those two decades. The 1990s show the Dow rise by four times its opening price. The 2010s saw price rise by 2.6 times. So the 1990s had better bullish performance. I would think that a downward breakout in the 1990s, when price was rising strongly, would cause more failures than the 2010s when price didn't climb as much.

Upward breakouts saw failures hold reasonably steady over the last 30 years.

Table 74.9 shows busted pattern performance. For the wedge to bust, price breaks out in one direction, moves no more than 10%, and then reverses. It has to travel to the other end of the wedge and close beyond it to bust.

For example, a busted downward breakout happens when price breaks out downward, drops less than 10%, and then rises to close above the top of the wedge.

Busted patterns count. Because wedges can be tall, I would expect a low bust rate, and that's true but only after an upward breakout.

Downward breakouts seem to bust double to triple the rate of upward breakouts.

Busted occurrence. I sorted busted patterns by how many times they busted. Single busted patterns placed first, but check the table for which ones come in second.

I like to see lots of single busts. They perform well, and if they happen most often, then it makes trading a busted pattern more reliable with less stress.

Table 74.9 Busted Patterns

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Busted patterns count	125 or 21%	558 or 63%	96 or 42%
Single bust count	67 or 54%	424 or 76%	58 or 60%
Double bust count	32 or 26%	14 or 3%	3 or 3%
Triple+ bust count	26 or 21%	120 or 22%	35 or 36%
Performance for all busted patterns	–14%	43%	22%
Single busted performance	–23%	56%	27%
Non-busted performance	–9%	38%	21%

Busted and non-busted performance. The last three rows in the table compare busted performance with non-busted wedges. Notice that single busted patterns outperform the other two rows, and by handsome amounts, too.

Consider trading a busted wedge after downward breakouts in bull markets. The rise averages 56%. Maybe you can bite off a bit of that for your wallet or purse.

Trading Tactics

Table 74.10 shows trading tactics.

Measure rule, targets. The measure rule for rising wedges is opposite that for falling wedges. The measure rule says that price should decline (downward breakouts) to the lowest valley in the wedge. For upward breakouts, I use the height of the wedge added to the breakout price.

The bottom portion of the table shows how often these two methods work. Incidentally, if you use half the height to get a prediction for an upward breakout target, it works 77% of the time.

Once you know where the price target is, change the distance into a percentage of the current price and check Table 74.3 to see how often price fails to move beyond the target.

Table 74.10 Trading Tactics

Trading Tactic	Explanation
Measure rule	For downward breakouts, the target is the bottom of the wedge. For upward breakouts, subtract the lowest low from the highest high and add it to the breakout price. The result is the target price. The bottom portion of the table shows how often this works.
Wait for breakout	Wait for the breakout (price should close outside the trendline) to improve the chances of a successful trade.
Take profit quickly	Since failures are high and the average rise or decline isn't great, be ready to close out the trade quickly.
Busted trade	See Table 74.9 for guidance. Only trade busted downward breakouts in bull markets.

Description	Bull Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Percentage reaching full height target	63%	32%	42%

For example, if the distance is $5 to the target from the current breakout price of $50, that's a 10% move. Table 74.3 says that in bull markets after upward breakouts, 32% of patterns will fail to see price rise more than 10%. So that gives you an idea of how often the trade will fail (and how many will succeed).

Figure 74.4 shows one application of the measure rule. The well-defined rising wedge (the June pattern) passes all the identification guidelines outlined in Table 74.1. A trader willing to short the stock would use the measure rule to gauge the likely profitability of the trade. In this example, the target price is the lowest price in the wedge, or 29.75. Price drops to the target just over a week after the breakout.

Wait for breakout. To improve the chances of trading success, wait for a breakout. Don't try to guess the breakout direction ahead of time. Mistakes can be costly.

Take profit quickly. With performance from the rising wedge so bad and failures even worse, you might want to reconsider trying to short this bad boy. If you have a death wish, then trade them carefully and watch for a reversal. Close out a trade quickly unless you find valid technical or fundamental evidence supporting your beliefs. Keep in mind that the market is always right. It will tell your wallet or purse when you've made a mistake.

Busted trade. I discussed how single busted wedges outperformed their non-busted siblings. I would stick to targeting downward breakouts in bull markets that bust. The single bust rate is high (76%), and single busted patterns outperform (gaining an average of 56%). That gain measures from the top of the wedge to the ultimate high.

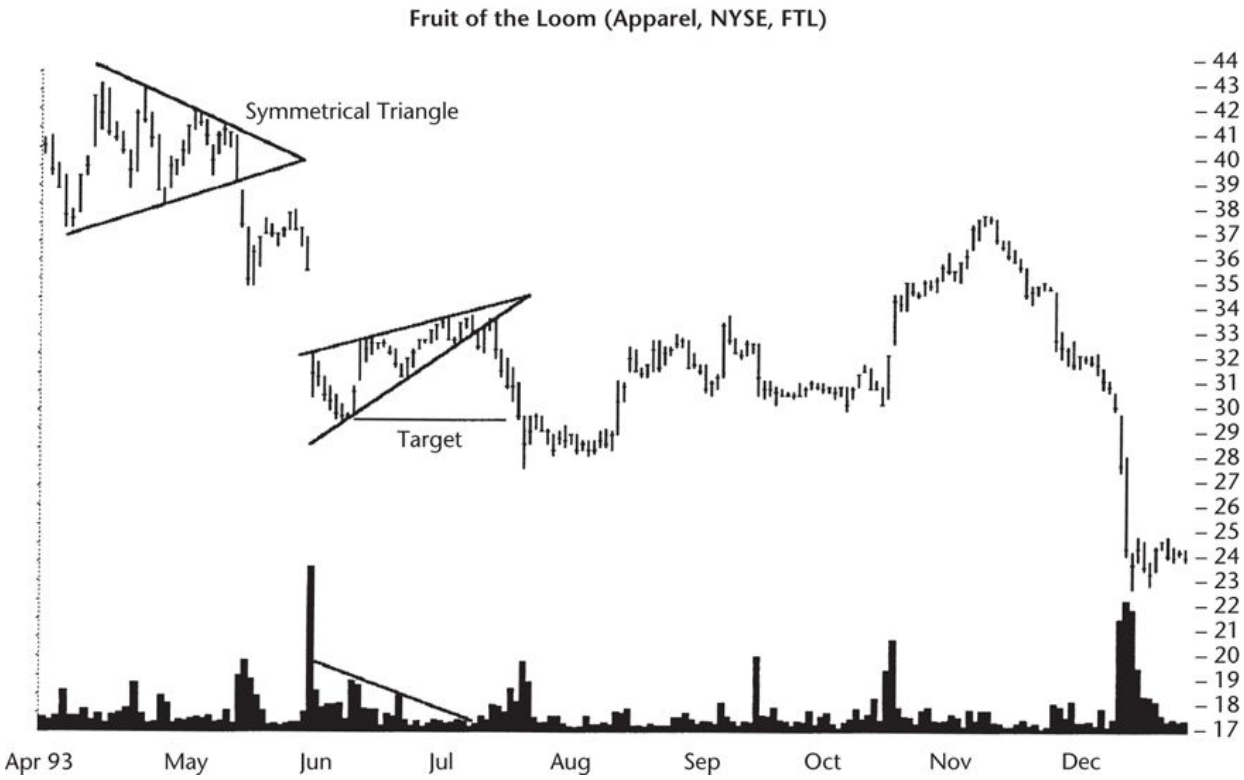


Figure 74.4 A downward breakout from the symmetrical triangle suggests price will fall. The measure rule for rising wedges with downward breakouts is simply the lowest price in the wedge, shown here at 29.75.

Sample Trade

Joe is a midlevel manager at a large corporation. One of the qualities in which he is gifted is patience. He handles stress easily and does not let small problems bother him. In his spare time, he likes to trade stocks and has developed a keen sense to make short sales work for him.

After returning from vacation, Joe discovered the situation shown in **Figure 74.5**. He missed the initial downward breakout but still wanted to short the stock.

Viewing the chart from a longer-term perspective, Joe believed that the wedge was an upward retrace in a long-term downtrend (not shown in the figure). He believed the stock would withdraw back to its launch price of about 30. He would consider closing out the trade at that point and not before unless price rose against him. So, he set a stop-loss order at the top of the wedge at 36.75, about 25 cents above the pattern's high.

If the stock price continued in his favor (down), then it would be completing a measured move down. Joe estimated that the measured move would take the stock to 28 and perhaps lower.

When the stock pulled back to the bottom trendline and headed down the next day, “I sold the stock short at 36.”

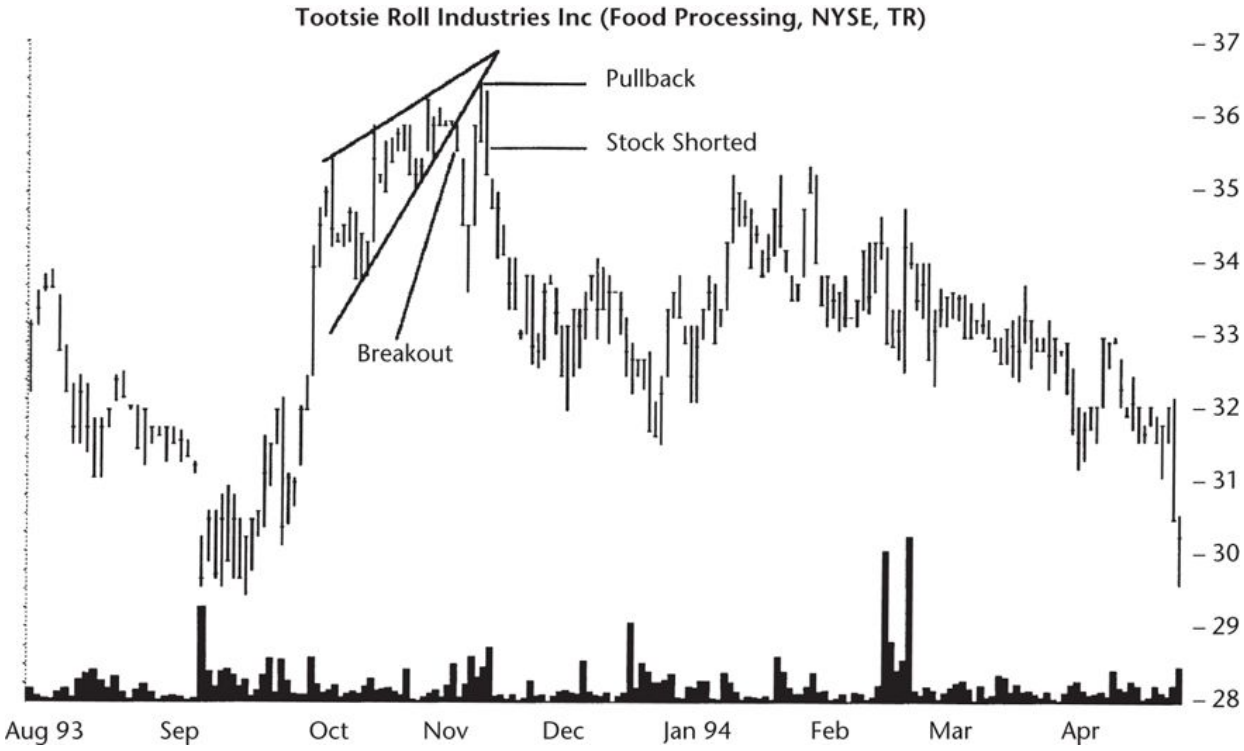


Figure 74.5 This rising wedge predicts price will fall to 33.75, and it does, in just 2 days.

He reviewed the measure rule that said the stock would fall to the bottom of the wedge for a decline of about 6% from the purchase price.

Joe watched the stock closely and was gratified to see price soon drop below the measure rule target of 33.75. Then the stock rebounded. As the stock climbed at the start of December, Joe reevaluated his short position. From what he was able to gather, the fundamental and technical situation had not changed, so he decided to sit tight.

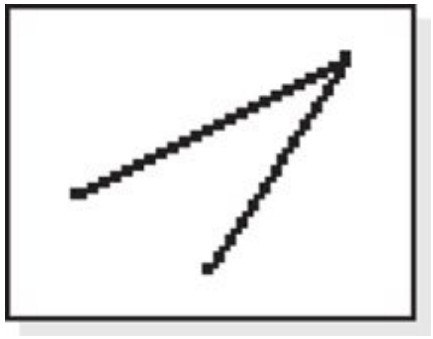
Even as the stock climbed above 35 in January, Joe believed he was right. The tenacious attitude served him well on this trade, and the stock soon began heading down again. In May, the stock reached his target price of 30. “I considered covering the short, but didn't.”

The stock moved sideways for about 4 months and then dropped again. It reached a low of 25.43 in mid-December and headed back up. Joe covered his short position at 27, just a week after it made a new low. On the trade, Joe made almost $9,000, or about 25%, on his 1,000 shares in about a year.

Did Joe trade this stock properly? Originally, he wanted to wait for the stock to reach his launch price, about 30, but then lowered his target. In other words, he veered away from his trading plan. Doing that can create bad habits which might lead to a big loss.

If his trading plan allowed him to reconsider additional evidence for a continued hold, then he was fine deviating. However, he could have entered additional trades during the 4 months when the stock moved sideways. Instead he held on in the hope that price would continue lower. That's risky for a short position.

75
Wolfe Wave®, Bearish



RESULTS SNAPSHOT

Appearance: A rising wedge, bounded by two up-sloping and converging trendlines.

Downward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Short-term bearish reversal	Short-term bearish reversal
Performance rank	35 out of 36	18 out of 19
Breakeven failure rate	30%	13%
Average decline	12%	19%
Percentage meeting price target	37%	41%
See also	Rising wedge	

The bearish Wolfe wave is part chart pattern and part trading methodology. It's a rising wedge with a signal line to provide trading guidance. We'll see examples of the pattern in a moment.

I used information provided by Bill Wolfe from his article, “Seeing the Future” (http://www.wolfewave.com), and built my own model based *only* on that article. It may or may not resemble actual Wolfe waves, and it certainly doesn't include the proprietary information he provides in his course.

I tested the chart pattern using the usual method of gauging the drop to the ultimate low. However, that's not how the pattern is traded. I'll test some of his ideas later in Trading Tactics. Using my traditional gauges, the breakeven failure rate is high in bull markets, 30%, but less than half that in bear markets.

The average decline is unimpressive at 12% (bull market) and 19% (bear market), which is why the performance rank is almost last in both markets (where a rank of 1 is best). The ability of the pattern to reach its target falls well short of what we see for other chart pattern types.

However, for swing traders, this chart pattern may interest you. Let's look at some examples.

Tour

Figure 75.1 shows an example of a bearish Wolfe wave. Price began a long uptrend starting from lows in September and October. When the Wolfe wave formed at the start of the New Year, you might think that the stock would want to take a rest after such a steep climb (a near double). I find that determining when an uptrend will end is always hard because they last longer than I expect. Wolfe-wavers might say it's not difficult to spot a trend end because of the appearance of the Wolfe wave at turns 1 through 5.

Price peaked at turn 1 and sent price lower to 2. Then the stock recovered to make a new high at 3, followed by a higher low at 4. All of that suggests an uptrend continuing: higher highs and higher lows, but at a diminished pace.

Even when point 5 appeared, everything looked good for a resumption of the uptrend. The high at 5 was above peak 3. In fact, a line drawn across the peaks formed a trendline with three touches. Connecting another trendline joining valleys 2 and 4 forms what I call a rising wedge. It's also a Wolfe wave.

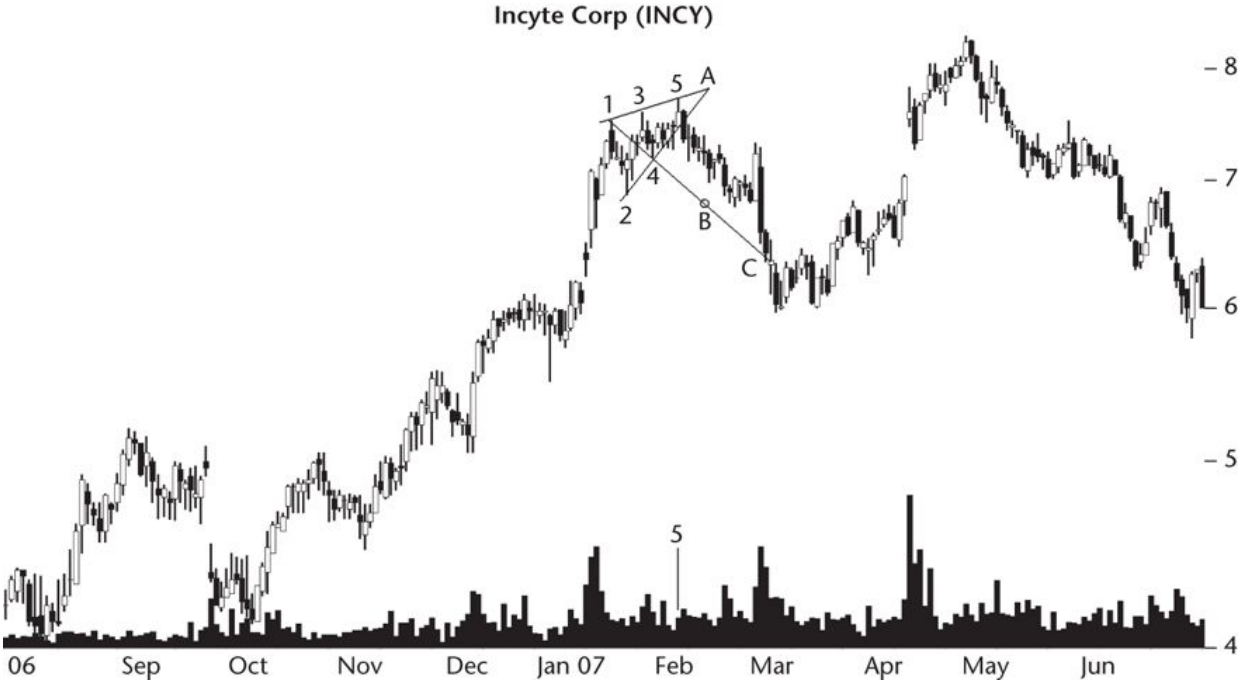


Figure 75.1 This Wolfe wave sees price drop but did not reach its target when it was expected.

Volume at turn 5 was not impressive. It was well below the prior three volume spikes that month. Wolfe writes that volume on turn 5 should be heavy, as if the bulls and bears are battling it out for control of the world. In this case, though, volume *was* higher at 5 than the day before but not the kind of spike you'd wish to see at turn 5. Nevertheless, the stock tumbled.

We've seen in triangle patterns that when the apex forms (like that shown at point A), it's often a turning point for the stock. The stock will reverse (form a minor high or low) almost directly above or below the apex (depending on the breakout direction). The stock may not change trend, and it often doesn't, but it *does* make a very short-term reversal.

In this case, the stock ignored the apex turn theory. I circled B on the line connecting points 1 and 4. Line 1–4 is called the EPA line (Estimate Price at Arrival). It's supposed to predict (with the apex) both the price and time of the decline. In other words, directly below the apex and matching line 1–4 (at B), the stock should have dropped that far. If it had, it would signal an exit.

From my experience looking at the pattern and reading Wolfe's description, the time element (the so-called “ETA” line, for Estimated Time of Arrival, which is different from the EPA line mentioned above) is deemphasized. However, it's an interesting notion. The ETA line *does* provide timing information, and I'd rather have such an educated guess than not have it. To use it, just drop a vertical line at the apex down until it reaches a line drawn connecting turns 1 and 4. I'll discuss this more later.

In this example, price touches line 1–4 (EPA) at C, signaling an end to the trade.

If you look at this chart, notice that the Wolfe wave appears right at the end of the uptrend. And it tells you to cover your short at C, almost near the bottom of the decline before the stock recovers. That's terrific timing.

How do we find the various turning points?

Identification Guidelines

Table 75.1 shows the identification guidelines. Consult Figure 75.2 for additional guidance as we go through the list of rules.

Points 1, 2. Wolfe suggests finding a Wolfe wave by locating point 2 first. It's any minor low or valley on the chart. Point 1 is the *top* of the prior hill. I emphasize the word, *top*.

In Wolfe's charts, he shows two examples where turn 1 is *not* at the top of the prior hill (in other words, line 1–3 cuts through price instead of resting on the top of the hill formed at turn 1). In my model, I did not accept this behavior. I always used peaks for point 1.

Point 3. From the valley at turn 2, price rises and peaks at point 3. Turn 3 must be higher than turn 1.

Table 75.1 Identification Guidelines

Characteristic	Discussion
Point 1	Wolfe describes point 1 this way: “The 1 point is the top prior to point 2 (bottom), that 3 has surpassed.” Look for the top of the hill leading to point 2, providing the top of point 1 is below the price of top 3.
Point 2	This is any minor low on the chart, providing it follows point 1.
Point 3	This is the top of the hill begun by point 2. Point 3 must be higher than point 1.
Point 4	This is the bottom of the hill begun by point 3. Point 4 must be above the price of 2, otherwise lines 2–4 and 1–3 will not converge.
Point 5	This is the top of the hill begun by point 4. It need not turn on line 1–3.
Apex, ETA	Lines 1–3 and 2–4, extended into the future, must converge. If they do not, then you do not have a Wolfe wave. Where they join is called the ETA, or Estimate Time of Arrival. It's the date of the wedge's apex.
Other rules	There should not be another higher peak or lower valley between the various turning points 1 through 5.
EPA	Estimated Price at Arrival. Draw a line connecting turns 1 and 4. When price meets the line, exit the trade.

Figure 75.2 Price met the target in this example on time.

Point 4. This is another valley or minor low that follows peak 3. The valley must be above the price of turn 2 so that lines joining turns 1 and 3 with another line connecting 2 and 4 converge. It should look like a rising wedge, because that's what it is.

Point 5. Turn 5 must be above peak 3. It forms from and after the valley of turn 4. Here's the tricky part. In my model, I like to see turn 5 line up with peaks 1 and 3 but provide a minor amount of wiggle room (see the chart, where point 5 is marginally above the top trendline).

According to Wolfe, you can draw a line starting at the top of point 3, parallel to line 2–4. If price stays within the area defined by this new line and line 1–3 (extended into the future), then point 5 is fine. It's what Wolfe calls the sweet spot. They key to point 5 is you're expecting the stock to drop after it appears.

Volume should increase on the day point 5 peaks and drop thereafter (for a few days, anyway). Otherwise, he says to be suspicious of the pattern. If volume is low, he suggests looking at a shorter time scale for a fractal Wolfe wave (a shorter Wolfe wave buried within the longer one).

In Figure 75.2, the stock *does* show increased volume at turn 5, and it's heavier than the prior week. But the following day, as price drops, volume increases even more

Apex, ETA. The apex of the wedge, where lines connecting peaks 1, 3, and 5 meet another line joining valleys 2 and 4, is what Wolfe calls the ETA or Estimated Time of Arrival. He writes, “I also do not count on the ETA as this adds just too many variables to the equation.” I'll tell how often the ETA works later in this chapter.

Other rules. I added additional rules so that there should not be peaks or valleys between the turns poking above or below lines 1–3–5 and 2–4. In other words, if I found a peak between turns 1 and 3 that was higher than 3, I would throw away the pattern.

EPA. The Estimate Price at Arrival, when used with the ETA, provides useful timing when it works. The EPA is the signal line. When price touches the line, it's a signal to close out the trade.

Look at Figure 75.2. The ETA is the date of the triangle's apex (which forms a day or two after point 5 in this example). The EPA is line 1–4, and it touches the stock right when it was predicted to (by the ETA). If you shorted the stock at peak 5 (or a day later) and covered the short at the EPA, you could have made money on the swing trade. In this example, however, the stock continued to drop all the way down to 50.33, well below the EPA of 64 and change.

Focus on Failures

Figure 75.3 shows an example of what the failure of a Wolfe wave looks like. Points 1 through 4 mark the four turns of the Wolfe wave. Point 5 peaks above line 1–3, but that's fine. It's within the sweet spot created by drawing a line parallel to line 2–4 starting at peak 3. I don't show that line, but it's easy enough to imagine.

Volume surrounding peak 5 is ideal. It peaks at turn 5 and is higher than any volume spike going back to February. Going forward, it's also higher than any spike going into June. Everything about this Wolfe wave suggests the stock will drop.

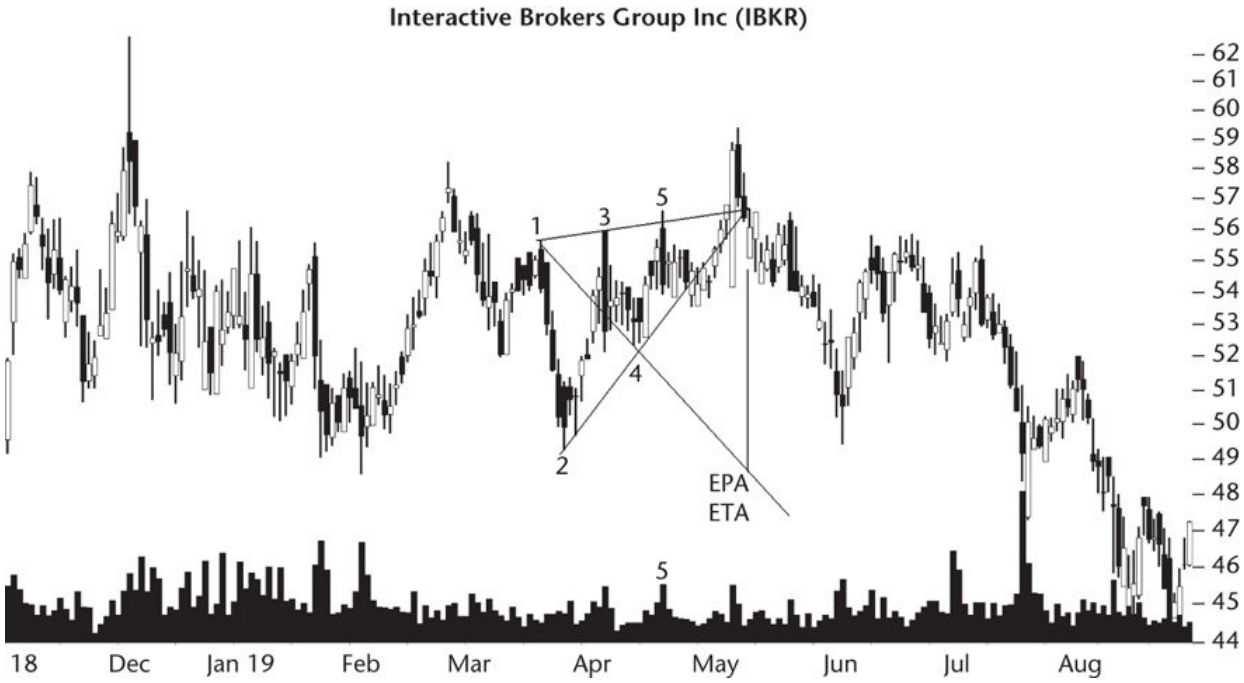


Figure 75.3 Price failed to perform as expected in this Wolfe wave.

I drew the ETA from the apex down until it met the EPA line (joining points 1–4). If the Wolfe wave worked as expected (or hoped), this would be the day the stock dropped to about 48. As you can see, price hasn't touched the EPA line (going into November 2019, not shown).

So what went wrong? This could be one example, carefully chosen, where the pattern didn't work. The reasons for it not working are unknown. However, the two prior charts do provide evidence. It's clearest on the first chart, Figure 75.1. Notice how the pattern appears in a distinct and obvious uptrend. Even Figure 75.2 shows an uptrend,

starting from the low in December 2018. The stock wobbled at the top, formed a Wolfe wave, and down the stock went.

In Figure 75.3, there is no uptrend. In fact, if you look at the longer-term chart, you'll see price is actually *declining*. You might think a declining price trend would help the pattern perform. Why? Because it's bearish and we *expect* price to drop. And yet, in this example, price drops for a bit after turn 5 but then makes a new high in May.

A check of the statistics suggests that when a Wolfe wave appears in a downtrend, price shows a larger decline, 12% (price trending down) to 10% (price trending up). I measured this using the price of the trend start (see the Glossary for a definition) compared to point 1.

I will say that Figure 75.3 is very choppy-looking, as if the stock is having a tough time finding a trend. Compare that to Figure 75.1, where the stock chart looks smoother, less choppy.

Let's discuss performance statistics for the Wolfe wave.

Statistics

Table 75.2 shows general statistics.

Number found. Wolfe waves are plentiful. I found 7,077 in 1,221 stocks from January 1990 to June 2019. Not all stocks covered the entire span, and some no longer trade.

Average decline. If you want to make money with this pattern, it'll be easier in a bear market, according to the statistics. In an apples-to-apples comparison with other types of chart patterns (from the peak at point 5 to the ultimate low), the drop falls well short of what other chart patterns average in both bull and bear markets.

Measured from the peak at point 5 to the EPA line (for those stocks which declined that far), the average decline is 9% in bull markets, but 14% in bear markets.

Breakeven failure rate. This is a measure of how many Wolfe waves fail to see price drop more than 5% from the high at point 5 (on the way down to the ultimate low, or to the EPA line). The two measures are different. The ultimate low uses a *close* above the top of point 5 or a rise of 20% off a low (see the Glossary, “Ultimate low,” for a better, more thorough explanation), but the failure rate for the EPA line uses the high price at point 5 to the low price that touches or drops below the EPA line.

The average failure rate in bull markets (and downward breakouts) for all chart pattern types is 24.7%, and in bear markets it's 10.6%. So the Wolfe wave is better (lower failure rates) than both of those measures.

Time to reach. The EPA line is the one connecting turns 1 and 4. The drop is fast, about 2 weeks, to reach the line on average. So you can make a decent chunk of change quickly with this pattern. Because the ultimate low is further away, it takes almost twice as long to reach it.

Table 75.2 General Statistics

Description	Bull Market	Bear Market
Number found	5,937	1,140
Average decline to ultimate low	–12%	–19%
Average decline to EPA	–9%	–14%
Breakeven failure rate to ultimate low	30%	13%
Breakeven failure rate to EPA line	23%	7%
Time to reach ultimate low	30 days	29 days
Time to reach EPA line	15 days	16 days
How many change trend?	18%	38%

How many change trend? As a measure of how many patterns see price drop more than 20% below the peak at turn 5, the results leave something to be desired. The numbers are well below what we've seen for other types of chart patterns (the averages: 28% for bull markets and 49% for bear markets).

Keep in mind that I didn't add any special sauce to the Wolfe model to improve performance. If you follow Wolfe's guidance, then maybe you can get the pattern to perform better.

Table 75.3 shows volume statistics as they relate to performance.

Performance, volume above/below average. I measured volume at point 5 (1 day) and compared it to the average volume of the prior month (not including point 5). Performance measures from the peak at point 5 to the ultimate low, not the EPA line.

I found that when point 5 had above-average volume, the stock declined marginally more, but the failure rate (the number in parenthesis) dropped markedly for both bull and bear markets.

Volume twice average. For those stocks where volume at peak 5 was at least twice the monthly average, the failure rate dropped even more (to 20%, bull market), but overall performance stayed about the same. In bear markets, both the performance (21%) and failure rate (9%) improved.

In short, *do* look for higher volume at peak 5.

In **Table 75.4** I show performance over time for the Wolfe wave as measured from the peak at point 5 to the ultimate low.

Table 75.3 Volume Statistics (Failure Rate)

Description	Bull Market	Bear Market
Performance when point 5 volume is above average	–12% (28%)	–19% (11%)
Performance when point 5 volume is below average	–11% (33%)	–20% (17%)
Volume twice average at point 5	–12% (20%)	–21% (9%)

Table 75.4 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	–13%
2000s	–12%
2010s	–11%
Performance (above), Failures (below)	
1990s	27%
2000s	28%
2010s	35%

As you scan down the table, notice that performance decreases while failure rates increase. The failure rate has jumped from 28% to 35% from the 2000s to 2010s. I don't know the reason for this, but it might be that the popularity of the pattern has more people trading it, leading to poorer performance (which can happen if people anticipate a move and act sooner than normal).

Trading Tactics

In **Table 75.5** I don't show the usual trading tactics. I suggest you visit Bill Wolfe's website or find a copy of his article, “Seeing the Future,” if you wish to know how to better trade the Wolfe wave.

Table 75.5 shows how often price drops to various points.

Hit ETA and EPA. I conducted a visual survey using 100 stocks. I found that 36% of the time, for those stocks that reached the EPA line, they reached the line within a 5-day window (2 days before the ETA to 2 days after). The result gives you an idea of how many trades will actually reach the price target on time. I only counted those in bull markets, not bear markets.

Hit EPA, stopped out, ultimate low. I measured (using a computer) what price did on the way to the ultimate low, which is the lowest low before price closed more than 20% above the low (after point 5).

If price *closed* above the top of point 5, then I considered the trade stopped out. In bull markets, just over half the trades were stopped out in this manner.

If price reached the EPA target, then that completed the trade. Just over a third reached the target. The remainder reached the ultimate low, the lowest low before a rebound.

Points 1 through 4. On the way to finding the ultimate low, I computed how often price dropped to the price of the associated turns. For example, I found that price on the way down from 5 reached the next nearest point (3) 86% of the time in bull markets and 92% of the time in bear markets.

In other words, you can use these percentages to help gauge how far price might drop.

Table 75.5 Trading Tactics

Description	Bull Market	Bear Market
Hit ETA & EPA	36%	Not measured
Hit EPA	37%	41%
Stopped out	56%	44%
Ultimate low	7%	14%
Point 1	68%	76%
Point 2	27%	37%
Point 3	86%	92%
Point 4	51%	57%

Sample Trade

Figure 75.4 shows how Miles made money trading the Wolfe wave.

I show the Wolfe wave as turns 1 through 5. At turn 5, Miles studied the pattern. “I liked how price climbed from the June low.” He also liked how volume was higher at C (on the volume scale) than most of the days of the preceding month.

He drew the EPA line by connecting turns 1 and 4. Because lines 1–3–5 and 2–4 were almost parallel, he ignored the ETA because the apex would be too far away.

The next day, before the market opened, he saw that the bid–asked range was likely to show the stock opening lower. “I decided to short the stock at 30.29.”

Immediately, he placed a stop-loss order at 31.13, three cents above the peak at turn 5. The target was the EPA line, which varied from day to day because of its slope. He decided to monitor it and sell when the stock touched the line.

“I watched the stock go nowhere for over a week and for me, that's a red flag. I've seen lots of shorts go bad when that happens.” He hoped the gap at A would provide enough overhead resistance to thwart any meaningful advance.

He was right. The stock eventually started down. When the stock reached B, the EPA line, he closed out the short at the end of the day and received a fill at 29.19.

On the swing trade, he made $1.10 a share or 3.5% in 18 calendar days.

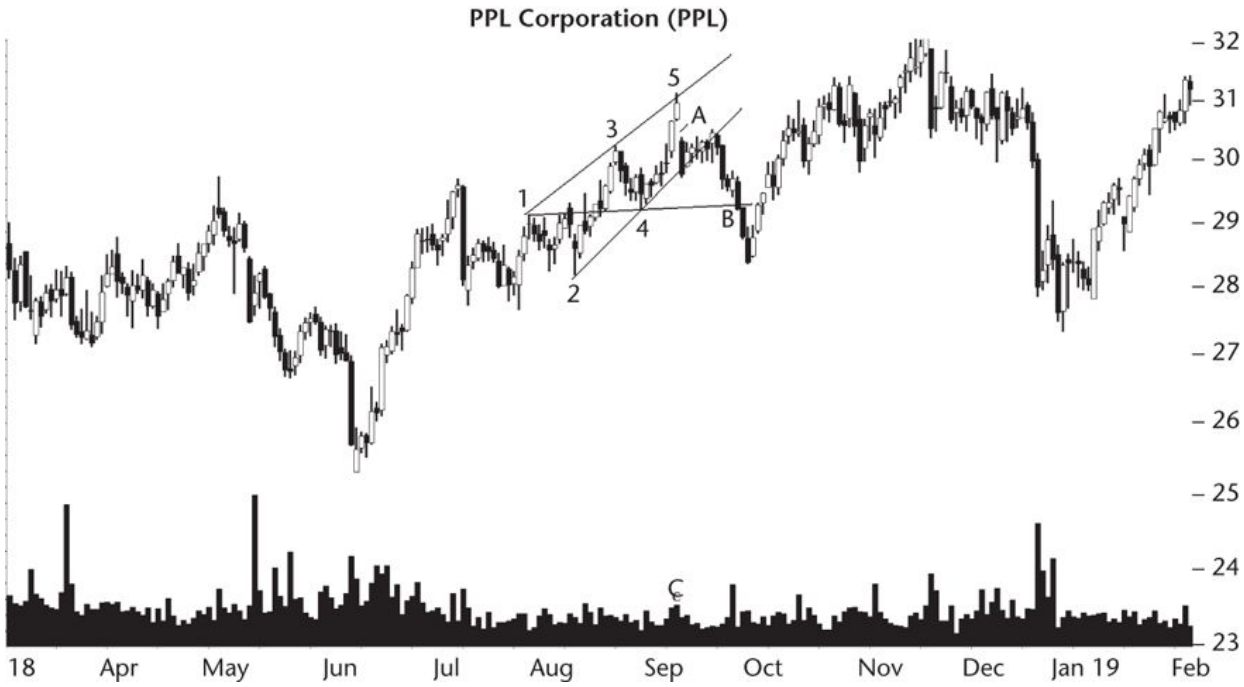
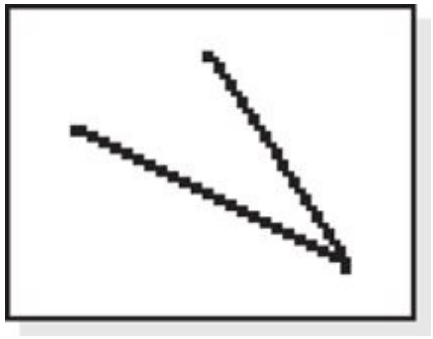


Figure 75.4 Miles makes money from this swing trade.

76
Wolfe Wave®, Bullish



RESULTS SNAPSHOT

Appearance: A falling wedge bounded by two down-sloping and converging trendlines.

Upward Breakouts

	Bull Market	**Bear Market**
Reversal or continuation	Long-term bullish reversal	Short-term bullish continuation
Performance rank	34 out of 39	4 out of 20
Breakeven failure rate	15%	5%
Average rise	35%	32%
Percentage meeting price target	47%	38%
See also	Falling wedge	

The layout of this chapter is different from many others in this book. To find the pattern, I used information provided by Bill Wolfe from his article, “Seeing the Future” (http://www.wolfewave.com), and built my own model based *only* on that article. It may or may not resemble actual Wolfe waves, and it certainly doesn't include the proprietary information he provides in his course.

In its simplest form, a bullish Wolfe wave is a falling wedge with a signal line. Wolfe calls the signal line the EPA (Estimated Price at

Arrival). I'll discuss that later.

The above Results Snapshot provides a glimpse into the pattern's behavior using my traditional gauges, that of the rise to the ultimate high. However, that's not how the pattern is supposed to be measured for performance. I'll measure and discuss some of Wolfe's targets in Trading Tactics. If you're a swing trader, pay close attention to that section.

The average rise in bull markets is below what you'd expect from bullish chart patterns. The rank reflects this dismal performance, putting it near the bottom of the list of chart patterns, where a rank of 1 is best.

In bear markets, however, the average rise at 32% is near the top of the list for best performance, ranking fourth where a rank of 1 is best.

The failure rate in bull markets is average, but the bear market failure rate is unusually small. Often the better the average rise the smaller the failure rate.

Let's look at a few examples before we delve into the performance statistics.

Tour

Figure 76.1 shows the five turns that compose the bullish Wolfe wave, numbered 1 through 5. A trendline connecting valleys 1 and 3 slopes downward but so does another trendline connecting peaks 2 and 4. The top trendline has a steeper slope so that the two lines converge sometime in the future. Where they meet is the apex of the falling wedge, which Wolfe calls the ETA (Estimated Time of Arrival). It's the date when the stock is supposed to meet the price target for the Wolfe wave.

An EPA line joins turns 1 and 4 like that shown in the figure. Extend that line into the future, and if you're lucky, price will match the EPA at the ETA, signaling a sale. Did I use too many acronyms?

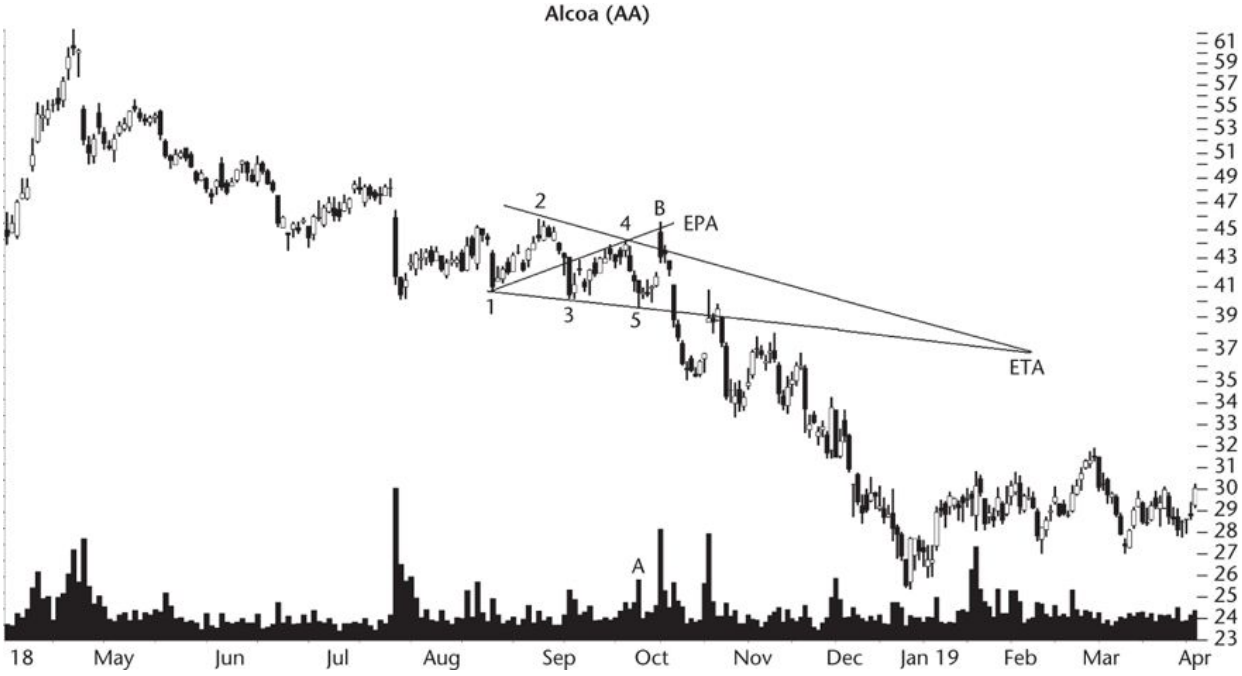


Figure 76.1 This bullish Wolfe wave meets its price target quickly.

In this example, however, price reaches the EPA at B well short of the wedge's apex (ETA).

Volume at turn 5 is heavy at A (volume scale). On either side of A, volume diminishes, which is what you want to see according to Wolfe. In short, a Wolfe wave is a falling wedge with five turns but adds the EPA line (1–4).

In this example, price breaks out upward at B and then dies. The pattern busts the upward breakout when price collapses and heads well below the bottom of the wedge. In the traditional sense, this example is bullish because of the upward breakout, but not so you'd stand up and cheer.

Let's discuss the guidelines for finding bullish Wolfe waves.

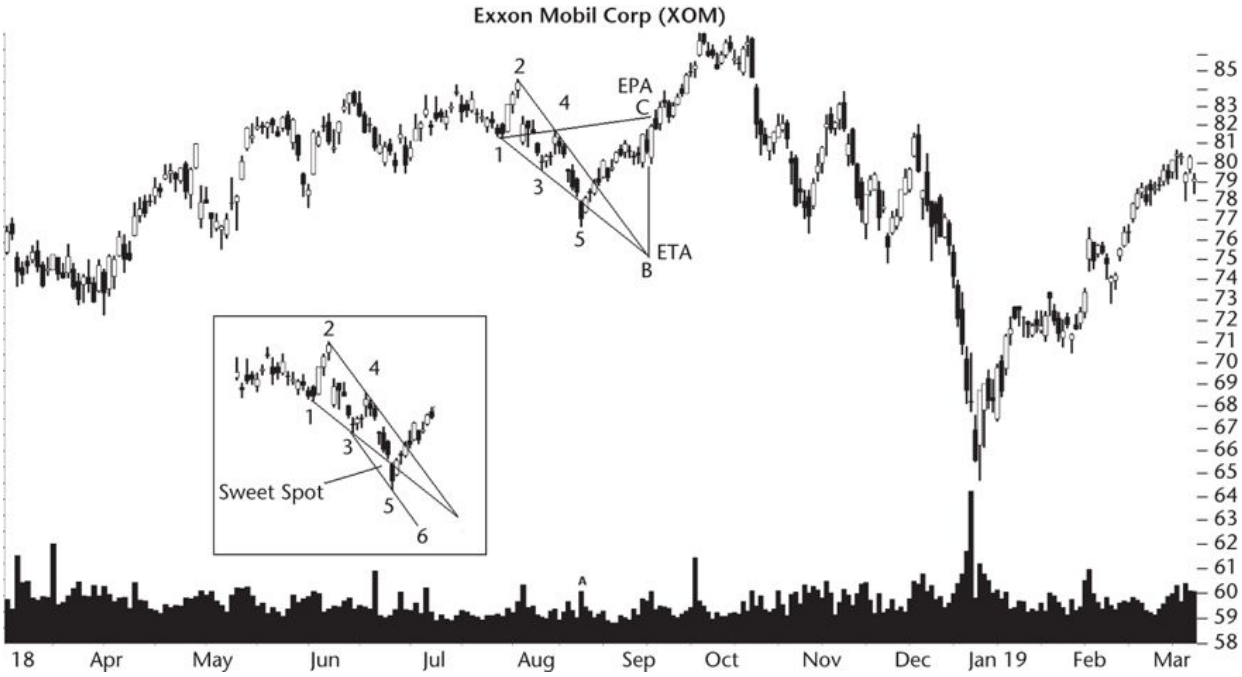
Identification Guidelines

Table 76.1 lists identification guidelines. Consult **Figure 76.2** for additional guidance as we go through the rules. I programmed my computer using the guidelines listed in Table 76.1 to find these patterns automatically.

Points 1, 2. Wolfe says to find point 2 first. It's any minor high on the chart. From there, look back and find the prior valley where price bottoms. That's point 1. However, in his documentation, he calls point 1 a “bottom,” and yet his charts show three examples of bullish Wolfe waves where the security cuts through price (in technical terms, it means point 1 is not a minor low). For Wolfe waves, I did not allow the stock to slice through price and call it a valid turn. I always looked for a minor low as point 1.

Table 76.1 Identification Guidelines

Characteristic	Discussion
Point 1	Wolfe describes point 1 this way: “The 1 point is the bottom prior to point 2 (top), that 3 has surpassed.” Look for the bottom of the hill leading to point 2, providing the bottom of point 1 is above the price of valley 3.
Point 2	This is any minor high on the chart, providing it follows point 1. It's the hill joining valley 1.
Point 3	This is the bottom of the hill begun by point 2.
Point 4	This is the top of the hill begun by point 3. Point 4 must be below the price of 2, otherwise lines 2–4 and 1–3 will not converge.
Point 5	This is the bottom of the hill begun by point 4. It need not turn on line 1–3.
Apex, ETA	Lines 1–3 and 2–4, extended into the future, must converge. If they do not, then you do not have a Wolfe wave. Where they join is called the ETA, or Estimated Time of Arrival. It's the date of the wedge's apex.
Other rules	There should not be another higher peak or lower valley between the various turning points 1 through 5.
EPA	Estimated Price at Arrival. Draw a line connecting turns 1 and 4. When price meets the line, exit the trade.



[Figure 76.2](#) This Wolfe wave sees price climb and meet its target almost exactly on schedule.

Point 3. The third turn is a valley formed after hill 2.

Point 4. This is the peak begun by valley 3. The price of this peak must be below the price of 2 so that we see two down-sloping and converging trendlines. A line connecting turns 1 and 4 is called the EPA. When price reaches the EPA line, that's the exit signal for a trade.

Point 5 is the valley formed after peak 4. It need not align with trendline 1–3; however, it can't be located off in the boonies, either. Rather, it must reside between line 1–3 and another line drawn from turn 3 and extended parallel to line 2–4. The area between lines 1–3 and 3–6 is what Wolfe calls the *sweet spot*. I show it in the inset.

Apex, ETA. Where the two trendlines (1–3 and 2–4) of the wave join is called the ETA or Estimated Time of Arrival. Price is supposed to turn at the ETA or at least join with the EPA line. If the two lines don't converge, then you don't have a Wolfe wave.

Other rules. I programmed my computer with additional conditions to make the pattern look like the figures in this chapter. That means no extraneous hills or valleys interrupting the converging shape of the

pattern. For example, if a peak between turns 2 and 4 were to poke above point 2, then you wouldn't have a Wolfe wave.

EPA. The EPA line connects turns 1 and 4 and provides the exit signal. When price touches the EPA (at C), close out the trade. We'll talk more about trading later.

Focus on Failures

Figure 76.3 shows an example of a Wolfe wave that appears at the top of an uptrend, one that is perhaps past its prime. A wider view would show the left shoulder of a head-and-shoulders top at D, with a head at E, and right shoulder at the Wolfe wave (probably B). Obviously, peaks 2 and 4 throw a monkey wrench into the picture, so the head-and-shoulders pattern is not ideal. However, you get the feeling that price *wants* to drop after peaking at E. So when price only climbs to B and dies, it may not come as a surprise.

The Wolfe wave is denoted by turns 1 through 5 in the figure. At turn 5, price extends below line 1–3, but that's fine provided it remains in the sweet spot (recall, that's a line drawn starting at turn 3, parallel to line 2–4), which it does.

Volume at turn 5 (A) looks perfect. It's higher than prior days, and as price climbs, volume diminishes, which is what Wolfe expects to happen in well-behaved patterns.

The EPA line (1–4) extended upward (to C) seems to have an unusually steep slope, probably too steep. Maybe the slope of the line is something you'll want to test and see if it has any significance. My guess is it does. You'll want to trade Wolfe waves with a less-steep EPA line.

In this example, price can't reach the EPA line.

If I were to buy the stock around turn 5, I'd probably exit the trade at the open the day after price closed below the 2–4 line at B. That would give me a small profit for a quick swing trade.

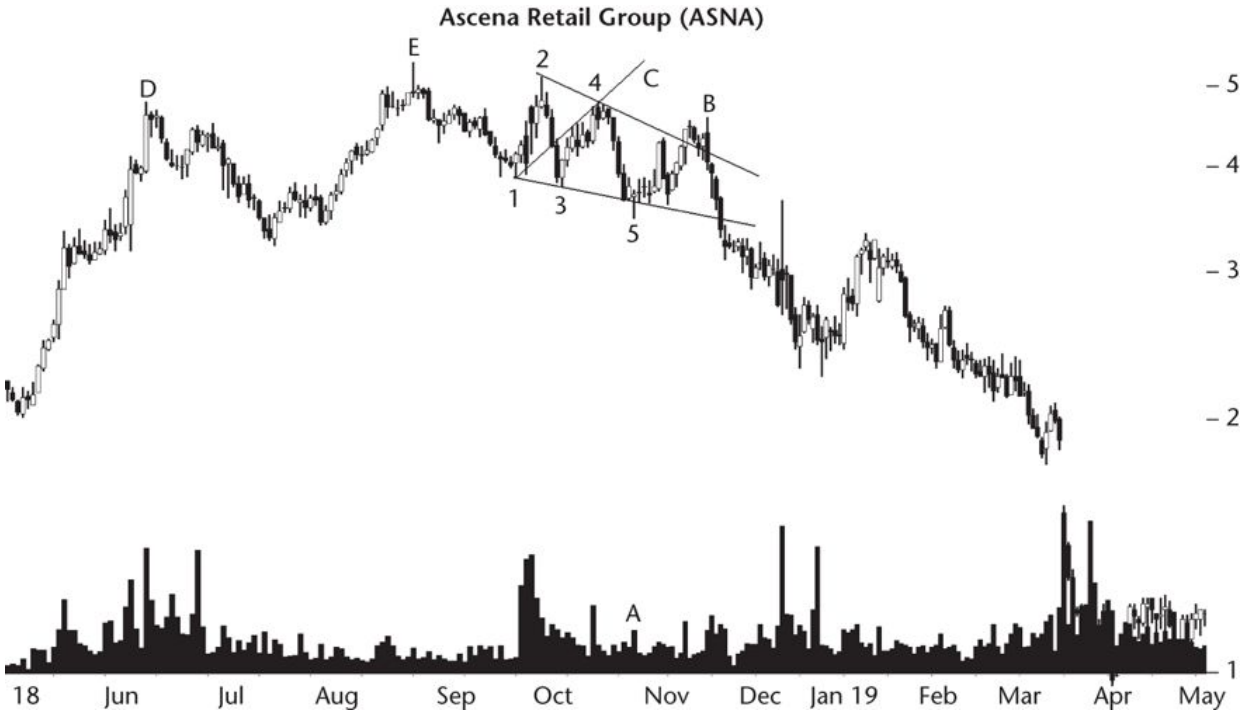


Figure 76.3 Price fails to rise far enough to reach its target.

Let's look at some performance statistics to see how the Wolfe wave behaves.

Statistics

Table 76.2 shows general statistics.

Number found. I found 6,251 patterns in 1,230 stocks using data stretching from January 1990 to June 2019. Not all stocks covered the entire time, and some no longer trade.

Average rise. The average rise measures from the low at point 5 to the ultimate high, which is the highest high before price tumbles more than 20% or closes below the bottom of the pattern.

If you traded the Wolfe wave perfectly and did it often enough, you'd make 35% in bull markets and slightly less than that in bear markets. Of course, you *won't* trade it perfectly, especially not over 5,000 times, so expect variations.

As the table shows, if you exit at the EPA line, you will fall well short of the results from a perfect trade. However, this (average rise to EPA) does provide a more realistic performance gauge. It's odd that bear markets (20%) show better performance for bullish patterns than do bull markets (13%).

Breakeven failure rate. The breakeven failure rate is a measure of how often price fails to rise more than 5% after the breakout.

The bull market results are about what you'd expect for a chart pattern. However, the bear market failures are unusually low. As I mentioned, I checked the data and couldn't find an explanation for this except to say, it is what it is. The performance rank of fourth (where 1 is best) also suggests good performance in bear markets, hence the low failure, too.

Table 76.2 General Statistics

Description	Bull Market	Bear Market
Number found	5,084	1,167
Average rise to ultimate high	35%	32%
Average rise to EPA	13%	20%
Breakeven failure rate to ultimate high	15%	5%
Breakeven failure rate to EPA line	13%	2%
Time to reach ultimate high	120 days	48 days
Time to reach EPA line	17 days	12 days
How many change trend?	40%	49%

The failure rate as price attempts to reach the EPA line is smaller (which is good) than when price rises to the ultimate high. The result measures from the low at turn 5 to the EPA line, and it's another gauge of how many patterns fail to rise more than 5%.

Time to reach. The time to reach the ultimate high is a function of how high the average rise is. It's going to take more time to reach the ultimate high (a 35% average rise in bull markets in 120 days) compared to price rising to the EPA line (a 13% rise in 17 days).

A check of the math says that the rise to the EPA line is more than twice as fast as the rise to the ultimate high. That's good news for swing traders. You can make more money quickly by trading the EPA line than waiting for the stock to reach the ultimate high on average.

How many change trend? This item is a measure of how many Wolfe waves see price rise more than 20% above the low at turn 5. Notice that the bear market result is higher than the bull market one, which is unusual. It may help explain why there are fewer bear market failures.

Table 76.3 shows volume statistics as they relate to performance.

Performance, volume above/below average. Because Wolfe places emphasis on turn 5 having volume above the prior days, I tested performance when volume was above or below the prior 1-month's average. In bull markets, Wolfe waves (as measured to the

ultimate high, not the EPA line) show better performance and fewer failures (which appear in parenthesis) when volume is above average.

In bear markets, there is no performance difference, but we do see a reduction in failure rates (almost cut in half, from 7% to 4%).

In short, *do* check that turn 5 has high volume.

Volume twice average. For grins, I checked performance when the turn at point 5 had at least twice the volume of the 1-month average. In bull markets, performance didn't change but failures decreased (which is good).

In bear markets, failures stayed the same but performance increased dramatically (from 26% to 36%). Again, performance measures from the low at point 5 to the ultimate high. So finding point 5 to have heavy volume is a plus.

Table 76.3 Volume Statistics (Failure Rate)

Description	Bull Market	Bear Market
Performance when point 5 volume is above average	28% (14%)	26% (4%)
Performance when point 5 volume is below average	26% (17%)	26% (7%)
Volume twice average at point 5	28% (12%)	36% (4%)

Table 76.4 Performance and Failures Over Time for Bull Markets

Description	Bull Market
1990s	34%
2000s	37%
2010s	33%
Performance (above), Failures (below)	
1990s	16%
2000s	13%
2010s	16%

Table 76.4 (performance, failures) shows performance and failures of the Wolfe wave over the last three decades using my traditional gauges to the ultimate high.

Performance for the pattern was best in the 2000s and that decade also had the fewest failures. The worst performance was in the 2010s, but the difference between the best performance (37%) and the worst (33%), isn't large. If we were to look at trades using the EPA line as an exit, you might not see much of a difference at all.

Trading Tactics

In **Table 76.5** I don't show the usual trading tactics. I suggest you visit Bill Wolfe's website or find a copy of his article, “Seeing the Future,” if you wish to know how to better trade the bullish Wolfe wave.

Table 76.5 shows how often price drops to various points.

Hit ETA and EPA. I conducted an informal test. I visually checked 100 stocks and counted how often Wolfe waves showed price reaching the EPA at the ETA. In other words, price at the wedge's apex should touch line 1–4 extended into the future, within a 5-day window (2 days before to 2 days after the ETA). Figure 76.4 shows an example of this at the junction of the EPA and ETA lines.

Table 76.5 Trading Tactics

Description	Bull Market	Bear Market
Hit ETA & EPA	24%	Not measured
Hit EPA	47%	38%
Stopped out	45%	43%
Ultimate high	7%	19%
Point 1	79%	75%
Point 2	43%	31%
Point 3	92%	89%
Point 4	63%	53%

I found that about a quarter of the patterns met the target on time. I did not test this in bear markets.

Hit EPA, stopped out, ultimate high. I pretended to trade the pattern and analyzed the exit reasons. I found that price hit the EPA line between a third (38%) to half (47%) of the time in bear/bull markets, respectively. A similar amount were stopped out, meaning price closed below the low at point 5. The rest never reached the EPA line but did reach the ultimate high. That is, price climbed to a peak and then tumbled by more than 20%.

Points 1 through 4. I checked how far up price climbed on its way to the ultimate high. For example, price will touch point 3 almost all the time, as one might expect (because it's the closest to turn 5). Points farther away, such as turn 2, see price reach it less than half the time.

You can use these percentages as guidance as you contemplate trading a rise to the EPA line or even the ultimate high.

Sample Trade

Figure 76.4 shows a sample trade Honey made using a Wolfe wave.

Price peaked in April and took a big dive (from D to E), but she couldn't find any news to account for the drop. After that, the stock rebounded and made its way up to B. At B the company announced second-quarter earnings. Some players in the market didn't appreciate the news (and sent the stock down sharply that day), but others liked what they heard. The stock recovered to form a doji candlestick, where the opening and closing prices are near or at the same value. The bottom of that day formed turn 1.

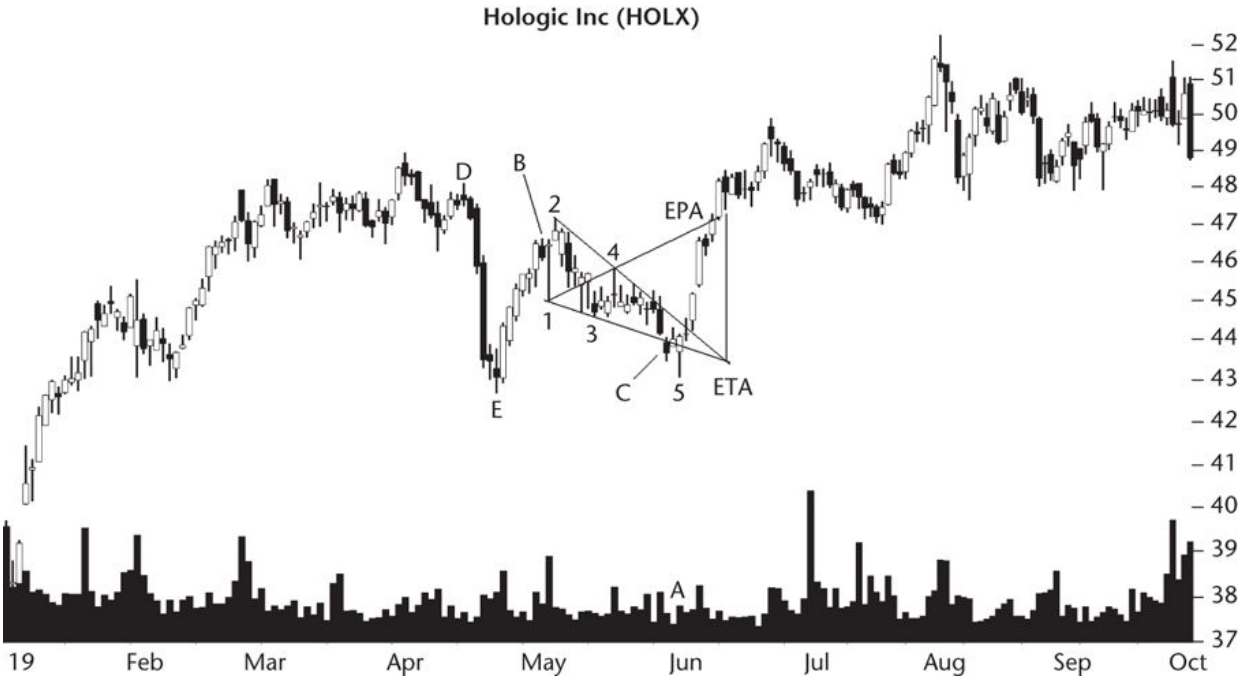


Figure 76.4 When the Wolfe wave works, it can be easy to make money quickly, as Honey found out.

Price peaked at turn 2, then wobbled lower, forming turns 3 and 4. At C, the company sent out a press release, titled, “FDA clearance of Aptima BV and Aptima CV/TV molecular assay ushers in new era of comprehensive and objective diagnostic testing for vaginitis.”

She thought that was good news, but the smart money the day before C sent price lower, and even on day C, the stock also closed down. Sometimes the anticipation of an event is more exciting than the

actual event. To put it another way, buy on the rumor and sell on the news. Maybe that's what happened to the stock.

Volume the day before C was higher than at C, so even though price had dropped below the 1–3 line (signaling a potential turn 5, and a buy signal), Honey didn't bite.

She drew a line connecting turns 1 and 4, forming the EPA line. By extending lines 1–3 and 2–4 until they joined at the wedge's apex, she had an idea of the timing. She could buy in at about 44 and sell at 47, making $3 on the trade.

At turn 5, volume perked up (point A), so “I bought at the open the next day, at 44.07.”

The stock cooperated. It moved up sharply over the next week. When the stock touched the EPA line, “I sold and received a fill at 46.90 for a profit of $2.83 a share and a hold time of 5 days.” That almost matched the $3 estimate.

Statistics Summary

The tables in this chapter show the average performance and failure rates for the chart patterns studied in this book. I present an alphabetical list of performance and then sort the results by market conditions and breakout directions. I do the same for failure rates.

Alphabetical List, Performance (higher percentage is better)

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
AB=CD, bearish*			–12.7%	–21.6%
AB=CD, bullish*	38.4%	30.5%		
Bat, bearish*			–14.3%	–20.2%
Bat, bullish*	44.3%	34.5%		
Big M			–16.6%	–22.3%
Big W	46.1%	29.6%		
Broadening bottom	44.8%		–14.6%	
Broadening formation, right-angled and ascending	42.7%		–14.3%	
Broadening formation, right-angled and descending	42.6%		–15.3%	
Broadening top	41.6%	25.0%	–13.4%	–21.6%
Broadening wedge, ascending	41.1%		–12.5%	
Broadening wedge, descending	39.3%		–13.2%	
Bump-and-run reversal, bottom	55.1%	34.7%		
Bump-and-run reversal, top			–17.2%	–24.2%
Butterfly, bearish*			–13.0%	–20.2%
Butterfly, bullish*	39.5%	27.8%		
Cloudbank**				
Crab, bearish*			–14.3%	–22.9%

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Crab, bullish*	39.1%	32.7%		
Cup with handle	53.6%			
Cup with handle, inverted			–17.1%	–23.0%
Diamond bottom	39.3%		–19.1%	
Diamond top	28.9%		–17.2%	
Diving board**	73.0%			
Double bottom, Adam & Adam	39.4%			
Double bottom, Adam & Eve	42.9%			
Double bottom, Eve & Adam	42.1%			
Double bottom, Eve & Eve	49.7%			
Double top, Adam & Adam			–15.2%	
Double top, Adam & Eve			–16.0%	
Double top, Eve & Adam			–15.4%	
Double top, Eve & Eve			–15.9%	
Flag, high tight	38.6%	24.6%		
Flag				
Gap				
Gartley, bearish*			–14.1%	–23.3%
Gartley, bullish*	36.3%	29.2%		

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Head-and-shoulders bottom	45.2%	28.2%		
Head-and-shoulders bottom, complex	47.0%	31.6%		
Head-and-shoulders top			–16.1%	–23.7%
Head-and-shoulders top, complex			–16.7%	–22.6%
Horn bottom**	59.0%	34.0%		
Horn top**			–19.0%	–26.0%
Island bottom	31.3%	19.7%		
Island top			–12.7%	–22.1%
Measured move down				
Measured move up				
Pennant				
Pipe bottom**	54.0%	33.0%		
Pipe top**			–19.0%	–24.0%
Rectangle bottom	47.6%		–15.7%	–25.5%
Rectangle top	50.9%	24.4%	–12.6%	
Roof	34.3%		–15.4%	
Roof, inverted	33.8%		–14.0%	
Rounding bottom	47.8%	37.1%		
Rounding top	54.6%	23.0%	–17.2%	–20.6%
Scallop, ascending	42.1%	23.4%	–14.7%	

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Scallop, ascending and inverted	45.1%	28.4%		
Scallop, descending	39.1%		−15.9%	−23.4%
Scallop, descending and inverted	47.0%		−16.0%	−22.0%
Three falling peaks			−14.9%	−22.8%
Three peaks and domed house				
Three rising valleys	48.0%	24.4%		
Triangle, ascending	43.0%		−12.8%	
Triangle, descending	37.8%	30.3%	−15.5%	−21.4%
Triangle, symmetrical	34.2%	26.1%	−12.3%	−19.1%
Triple bottom	45.6%	26.6%		
Triple top			−14.4%	−22.3%
V bottom	39.5%	32.0%		
V bottom, extended	39.5%	33.4%		
V top			−15.0%	−23.6%
V top, extended			−18.4%	−25.7%
Wedge, falling	38.3%	26.2%	−13.8%	
Wedge, rising	37.9%		−9.1%	−16.9%

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Wolfe wave, bearish			−11.8%	−18.6%
Wolfe wave, bullish	34.8%	32.5%		
Average for patterns without * or **	42.4%	28.1%	−14.9%	−22.2%

* These have a special measure and are not comparable to the other chart patterns.

** These use the weekly or monthly scale and are not comparable to those that use the daily scale.

Alphabetical, Performance Rank (1 is best), Daily Scale

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Big M			8	10
Big W	11	8		
Broadening bottom	15		23	
Broadening formation, right-angled and ascending	18		25	
Broadening formation, right-angled and descending	19		18	
Broadening top	22	14	28	14
Broadening wedge, ascending	23		33	
Broadening wedge, descending	27		29	
Bump-and-run reversal, top			3	3
Bump-and-run reversal, bottom	1	2		
Cup with handle	3			
Cup with handle, inverted			6	7
Diamond bottom	27		1	
Diamond top	39		3	
Double bottom, Adam & Adam	26			

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Double bottom, Adam & Eve	17			
Double bottom, Eve & Adam	20			
Double bottom, Eve & Eve	5			
Double top, Adam & Adam			19	
Double top, Adam & Eve			10	
Double top, Eve & Adam			16	
Double top, Eve & Eve			12	
Flag, high tight	30	15		
Head-and-shoulders bottom	13	10		
Head-and-shoulders bottom, complex	9	6		
Head-and-shoulders top			9	4
Head-and-shoulders top, complex			7	9
Island bottom	38	20		
Island top			31	12
Rectangle bottom	8		14	2
Rectangle top	4	16	32	

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Roof	35		16	
Roof, inverted	37		26	
Rounding bottom	7	1		
Rounding top	2	19	3	16
Scallop, ascending	20	18	22	
Scallop, ascending and inverted	14	9		
Scallop, descending	29		12	6
Scallop, descending and inverted	9		10	13
Three falling peaks			21	8
Three rising valleys	6	16		
Triangle, ascending	16		30	
Triangle, descending	33	7	15	15
Triangle, symmetrical	36	13	34	17
Triple bottom	12	11		
Triple top			24	10
V bottom	24	5		
V bottom, extended	24	3		
V top			20	5

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
V top, extended			2	1
Wedge, falling	31	12	27	
Wedge, rising	32		36	19
Wolfe wave, bearish			35	18
Wolfe wave, bullish	34	4		
Max Rank	39	20	36	19

Alphabetical, Performance Rank (1 is best), Fibonacci Patterns Only

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
AB=CD, bearish			5	3
AB=CD, bullish	4	3		
Bat, bearish			1	4
Bat, bullish	1	1		
Butterfly, bearish			4	4
Butterfly, bullish	2	5		
Crab, bearish			1	2
Crab, bullish	3	2		
Gartley, bearish			3	1
Gartley, bullish	5	4		
Max rank	5	5	5	5

Alphabetical, Performance Rank (1 is best), Weekly Patterns Only

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Diving board	1			
Horn bottom	2	1		
Horn top			1	1
Pipe bottom	3	2		
Pipe top			1	2

Top Ten Best Performing Patterns, Bull Market, Up Breakout

Description	Average Rise	Failures
Bump-and-run reversal, bottom	55.1%	9.4%
Rounding top	54.6%	8.9%
Cup with handle	53.6%	5.3%
Rectangle top	50.9%	15.4%
Double bottom, Eve & Eve	49.7%	11.7%
Three rising valleys	48.0%	9.7%
Rounding bottom	47.8%	4.3%
Rectangle bottom	47.6%	15.1%
Head-and-shoulders bottom, complex	47.0%	6.6%
Scallop, descending and inverted	47.0%	16.0%

Top Ten Best Performing Patterns, Bear Market, Up Breakout

Description	Average Rise	Failures
Rounding bottom	37.1%	6.0%
Bump-and-run reversal, bottom	34.7%	10.3%
V bottom, extended	33.4%	7.4%
Wolfe wave, bullish	32.5%	5.2%
V bottom	32.0%	14.1%
Head-and-shoulders bottom, complex	31.6%	12.2%
Triangle, descending	30.3%	21.7%
Big W	29.6%	9.3%
Scallop, ascending and inverted	28.4%	9.0%
Head-and-shoulders bottom	28.2%	9.4%

Top Ten Best Performing Patterns, Bull Market, Down Breakout

Description	Average Decline	Failures
Diamond bottom	–19.1%	15.1%
V top, extended	–18.4%	15.0%
Rounding top	–17.2%	20.1%
Diamond top	–17.2%	15.0%
Bump-and-run reversal, top	–17.2%	13.6%
Cup with handle inverted	–17.1%	17.6%
Head-and-shoulders top, complex	–16.7%	18.1%
Big M	–16.6%	14.3%
Head-and-shoulders top	–16.1%	18.8%
Scallop, descending and inverted	–16.0%	17.0%

Top Ten Best Performing Patterns, Bear Market, Down Breakout

Description	Average Decline	Failures
V top, extended	–25.7%	5.1%
Rectangle bottom	–25.5%	6.3%
Bump-and-run reversal, top	–24.2%	6.8%
Head-and-shoulders top	–23.7%	5.2%
V top	–23.6%	14.3%
Scallop, descending	–23.4%	7.1%
Cup with handle inverted	–23.0%	8.8%
Three falling peaks	–22.8%	7.4%
Head-and-shoulders top, complex	–22.6%	7.0%
Big M	–22.3%	8.1%

Alphabetical List, Failure Rates (lower percentage is better)

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
AB=CD, bearish*			26.3%	10.2%
AB=CD, bullish*	11.6%	3.7%		
Bat, bearish*			17.7%	4.5%
Bat, bullish*	10.2%	4.3%		
Big M			14.3%	8.1%
Big W	9.3%	9.3%		
Broadening bottom	16.4%		26.2%	
Broadening formation, right-angled and ascending	15.1%		28.4%	
Broadening formation, right-angled and descending	20.8%		23.0%	
Broadening top	18.0%	17.5%	27.2%	9.3%
Broadening wedge, ascending	15.2%		31.0%	
Broadening wedge, descending	17.9%		34.9%	
Bump-and-run reversal, bottom	9.4%	10.3%		
Bump-and-run reversal, top			13.6%	6.8%
Butterfly, bearish*			27.3%	7.6%
Butterfly, bullish*	11.4%	2.6%		
Cloudbank**				
Crab, bearish*			19.8%	8.9%

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Crab, bullish*	7.1%	2.6%		
Cup with handle	5.3%			
Cup with handle, inverted			17.6%	8.8%
Diamond bottom	13.1%		15.1%	
Diamond top	20.9%		15.0%	
Diving board**	4.0%			
Double bottom, Adam & Adam	16.4%			
Double bottom, Adam & Eve	12.3%			
Double bottom, Eve & Adam	11.6%			
Double bottom, Eve & Eve	11.7%			
Double top, Adam & Adam			24.7%	
Double top, Adam & Eve			20.7%	
Double top, Eve & Adam			21.5%	
Double top, Eve & Eve			20.0%	
Flag, high tight	15.1%	19.5%		
Flag				
Gap				
Gartley, bearish*			21.5%	7.3%
Gartley, bullish*	13.5%	5.9%		

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Head-and-shoulders bottom	10.5%	9.4%		
Head-and-shoulders bottom, complex	6.6%	12.2%		
Head-and-shoulders top			18.8%	5.2%
Head-and-shoulders top, complex			18.1%	7.0%
Horn bottom**	6.0%	9.0%		
Horn top**			9.0%	3.0%
Island bottom	31.0%	29.7%		
Island tops			33.7%	13.8%
Measured move down				
Measured move up				
Pennant				
Pipe bottom**	8.0%	8.0%		
Pipe top**			13.0%	5.0%
Rectangle bottom	15.1%		24.3%	6.3%
Rectangle top	15.4%	15.2%	34.3%	
Roof	25.7%		21.6%	
Roof, inverted	23.1%		25.1%	
Rounding bottom	4.3%	6.0%		
Rounding top	8.9%	17.3%	20.1%	11.9%
Scallop, ascending	10.9%	17.8%	23.2%	

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Scallop, ascending and inverted	9.5%	9.0%		
Scallop, descending	14.1%		17.8%	7.1%
Scallop, descending and inverted	16.0%		17.0%	10.0%
Three falling peaks			22.5%	7.4%
Three peaks and domed house				
Three rising valleys	9.7%	12.1%		
Triangle, ascending	17.0%		38.2%	
Triangle, descending	22.1%	21.7%	23.2%	13.0%
Triangle, symmetrical	25.4%	23.4%	36.9%	19.3%
Triple bottom	13.3%	12.7%		
Triple tops			25.3%	7.7%
V bottom	18.9%	14.1%		
V bottom extended	10.4%	7.4%		
V top			29.2%	14.3%
V top extended			15.0%	5.1%
Wedge, falling	25.7%	23.9%	29.2%	
Wedge, rising	19.4%		51.4%	27.7%

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Wolfe wave, bearish			29.6%	13.4%
Wolfe wave, bullish	15.2%	5.2%		
Average for patterns without * or **	15.3%	14.7%	24.7%	10.6%

* These have a special measure and are not comparable to the other chart patterns.

** These use the weekly or monthly scale and are not comparable to those that use the daily scale.

Alphabetical, Failure Rate Rank (1, best, means fewest failures), Daily Scale

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Big M			2	9
Big W	5	5		
Broadening bottom	25		24	
Broadening formation, right-angled and ascending	18		26	
Broadening formation, right-angled and descending	32		17	
Broadening top	29	14	25	11
Broadening wedge, ascending	21		30	
Broadening wedge, descending	28		33	
Bump-and-run reversal, top	6	7		
Bump-and-run reversal, bottom			1	4
Cup with handle	2			
Cup with handle, inverted			7	10
Diamond bottom	15		5	
Diamond top	33		3	
Double bottom, Adam & Adam	25			

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Double bottom, Adam & Eve	14			
Double bottom, Eve & Adam	12			
Double bottom, Eve & Eve	13			
Double top, Adam & Adam			21	
Double top, Adam & Eve			13	
Double top, Eve & Adam			14	
Double top, Eve & Eve			11	
Flag, high tight	18	16		
Head-and-shoulders bottom	10	6		
Head-and-shoulders bottom, complex	3	9		
Head-and-shoulders top			10	2
Head-and-shoulders top, complex			9	5
Island bottom	39	20		
Island tops			31	16
Rectangle bottom	18		20	3
Rectangle top	23	12	32	

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Roof	37		15	
Roof, inverted	35		22	
Rounding bottom	1	2		
Rounding top	4	13	12	13
Scallop, ascending	11	15	18	
Scallop, ascending and inverted	7	4		
Scallop, descending	17		8	6
Scallop, descending and inverted	24		6	12
Three falling peaks			16	7
Three rising valleys	8	8		
Triangle, ascending	27		35	
Triangle, descending	34	17	18	14
Triangle, symmetrical	36	18	34	18
Triple bottom	16	10		
Triple top			23	8
V bottom	30	11		
V bottom extended	9	3		
V top			27	17

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
V top extended			3	1
Wedge, falling	37	19	27	
Wedge, rising	31		36	19
Wolfe wave, bearish			29	15
Wolfe wave, bullish	21	1		
Max Rank	39	20	36	19

Alphabetical, Failure Rate Rank (1 is fewest failures), Fibonacci Patterns Only

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
AB=CD bearish			4	5
AB=CD bullish	4	3		
Bat bearish			1	1
Bat bullish	2	4		
Butterfly bearish			5	3
Butterfly bullish	3	1		
Crab, bearish			2	4
Crab, bullish	1	1		
Gartley, bearish			3	2
Gartley, bullish	5	5		
Max rank	5	5	5	5

Alphabetical, Failure Rate Rank (1 is fewest failures), Weekly Patterns

Description	Bull Market, Up Breakout	Bear Market, Up Breakout	Bull Market, Down Breakout	Bear Market, Down Breakout
Diving board	1			
Horn bottom	2	2		
Horn top			1	1
Pipe bottom	3	1		
Pipe top			2	2

Top Ten Fewest Failures, Bull Market, Up Breakout

Description	Average Rise	Failures
Rounding bottom	47.8%	4.3%
Cup with handle	53.6%	5.3%
Head-and-shoulders bottom, complex	47.0%	6.6%
Rounding top	54.6%	8.9%
Big W	46.1%	9.3%
Bump-and-run reversal, bottom	55.1%	9.4%
Scallop, ascending and inverted	45.1%	9.5%
Three rising valleys	48.0%	9.7%
V bottom extended	39.5%	10.4%
Head-and-shoulders bottom	45.2%	10.5%

Top Ten Fewest Failures, Bear Market, Up Breakout

Description	Average Rise	Failures
Wolfe wave, bullish	32.5%	5.2%
Rounding bottom	37.1%	6.0%
V bottom, extended	33.4%	7.4%
Scallop, ascending and inverted	28.4%	9.0%
Big W	29.6%	9.3%
Head-and-shoulders bottom	28.2%	9.4%
Bump-and-run reversal, bottom	34.7%	10.3%
Three rising valleys	24.4%	12.1%
Head-and-shoulders bottom, complex	31.6%	12.2%
Triple bottom	26.6%	12.7%

Top Ten Fewest Failures, Bull Market, Down Breakout

Description	Average Decline	Failures
Bump-and-run reversal, top	–17.2%	13.6%
Big M	–16.6%	14.3%
Diamond top	–17.2%	15.0%
V top, extended	–18.4%	15.0%
Diamond bottom	–19.1%	15.1%
Scallop, descending and inverted	–16.0%	17.0%
Cup with handle, inverted	–17.1%	17.6%
Scallop, descending	–15.9%	17.8%
Head-and-shoulders top, complex	–16.7%	18.1%
Head-and-shoulders top	–16.1%	18.8%

Top Ten Fewest Failures, Bear Market, Down Breakout

Description	Average Decline	Failures
V top extended	–25.7%	5.1%
Head-and-shoulders top	–23.7%	5.2%
Rectangle bottom	–25.5%	6.3%
Bump-and-run reversal, top	–24.2%	6.8%
Head-and-shoulders top, complex	–22.6%	7.0%
Scallop, descending	–23.4%	7.1%
Three falling peaks	–22.8%	7.4%
Triple top	–22.3%	7.7%
Big M	–22.3%	8.1%
Cup with handle, inverted	–23.0%	8.8%

Glossary

The statistics in this book use hundreds or thousands of *perfect trades* (buying at the breakout price and selling at the ultimate high or ultimate low). The likelihood of duplicating that in actual trading is zero. Thus, do not expect your trades to perform as well as the "average" statistics in this book. You may do better (or worse). Rather, use the statistics as tools to help gauge how well the pattern you are about to trade will perform when compared to other chart patterns in this book.

The following tables appear in most chapters. X is the chapter number (such as Table x.2 where x is the chapter number). Beside each table entry is an explanation.

Following that is a glossary of terms. Time is measured in calendar days, not price bars or trading days unless otherwise noted.

Often in this book, I'll write something like "compared to all other chart pattern types." That does not include Fibonacci patterns or those on a time scale longer than daily.

Results Snapshot (sorted by breakout direction and market condition)

Description	Explanation
Reversal or continuation	A three-part phrase: term, bullish/bearish, reversal/continuation. *Term* (short, intermediate, long) is set by the number of days to the ultimate high or low. *Bullish* for upward breakouts, *bearish* for downward ones. *Reversal/continuation* depends on which happens more often.
Performance rank	A numerical rank of the average rise or decline from the breakout to the ultimate high or low, respectively, when compared to other patterns on the associated time scale (daily, weekly).
Breakeven failure rate	A percentage of how often price fails to rise (upward breakouts) or decline (downward breakouts) more than 5% on the way to the ultimate high or low, respectively.
Average rise/decline	A percentage calculated from the breakout price to the ultimate high (upward breakouts) or low (downward breakouts).
Volume trend	The slope of the line found using linear regression to determine the volume trend from the start of the pattern to its end.
Throwbacks/pullbacks	A percentage telling how often a throwback or pullback happens after the breakout.
Percentage meeting price target	Tells how often price reaches the full height measure rule target.

Table x.2 General Statistics

Description	Explanation
Number found	The number of chart patterns found in Bulkowski's database.
Reversal (R), continuation (C) occurrence	The percentage of time the chart pattern acted as a reversal or continuation of the prevailing price trend.
Reversal, continuation performance	The percentage move from breakout price to ultimate high or low price for those chart patterns acting as reversals and continuations.
Average rise/decline	The average rise or decline from the breakout price to the ultimate high or low price.
Standard & Poor's 500 change	How the index performed if held from the date of the chart pattern's breakout to the date of the ultimate high or low.
Days to ultimate high or low	The number of days from the breakout to the ultimate high or low.
How many change trend?	A percentage of patterns that see price move more than 20% from the breakout price to the ultimate high or low price. The intent is to show how many patterns see price trend after the breakout.

Table x.3 Cumulative Failure Rates

Maximum Price Rise or Decline (%)	Explanation
5 (breakeven)	A count and percentage of how often price fails to rise (decline) more than 5% after the breakout. Also called the breakeven failure rate.
10 (or 15, 20, ...)	A count and percentage of how often price fails to rise (decline) more than 10%, 15%, and so on, after the breakout.

Table x.4 Breakout and Post-Breakout Statistics

Description	Explanation
Breakout direction	A percentage of how often price breaks out upward or downward.
Performance of breakouts occurring near the 12-month low (L), middle (M) or high (H)	The average rise/decline from breakout price to ultimate high/low price sorted by where the breakout price appears in the yearly high–low price range.
Median breakout distance to apex	Only appears for triangles and wedges. A ratio expressed as a percentage of the distance from the start of the chart pattern to the breakout versus the length of the chart pattern from start to apex, measured in calendar days. The median is reported for all chart patterns of a given type.
Throwback/pullback occurrence	A percentage of the number of throwbacks/pullbacks occurring versus the number of chart patterns found.
Average time to throwback/pullback peaks	The percentage move and number of days before price begins to return to the breakout price during a throwback or pullback.
Average time to throwback/pullback ends	The average time from breakout to the stock returning to (or comes close to) the breakout price for those patterns with throwbacks or pullbacks. It's the round-trip time for price to complete a throwback or pullback.
Average rise/decline for patterns with throwbacks/pullbacks	The average rise/decline for those patterns *with* throwbacks/pullbacks.
Average rise/decline for patterns without throwbacks/pullbacks	The average rise/decline for those patterns *without* throwbacks/pullbacks.

Description	Explanation
Percentage price resumes trend	Tells how often price resumes trending in the breakout direction (either up or down) after completing a throwback or pullback.
Performance with breakout day gap	The average rise/decline for those patterns *with* gaps on the day of breakout. This uses the opening price the day *after* a gap as the entry price in the measure to the ultimate high or low.
Performance without breakout day gap	The average rise/decline for those patterns *without* gaps on the day of breakout.
Average gap size	For patterns with breakout day gaps, this is the average height of the gap.

Table x.5 Size Statistics

Description	Explanation
Tall pattern performance	The average rise/decline for patterns taller than the median height.
Short pattern performance	The average rise/decline for patterns equal to or shorter than the median height.
Median height as a percentage of breakout price	The median of the height divided by the breakout price.
Narrow pattern performance	The average rise/decline for patterns equal to or narrower than the median width.
Wide pattern performance	The average rise/decline for patterns wider than the median width.
Median width	The median width from pattern start to end.
Height and width performance	The average rise/decline for the four combinations of pattern height and width.

Table x.6 Volume Statistics

Description	Explanation
Volume trend	The percentage and direction volume trends most often (such as: 69% down) from the start to end of the chart pattern as found using linear regression.
Rising/falling volume trend performance	Performance of chart patterns sorted by a rising or falling volume trend.
Heavy/light breakout volume performance	Average performance of patterns with breakout day volume higher/lower than the 30-day average (not including the breakout day).

Table x.7 How Often Stops Hit

Description	Explanation
Location	For upward breakouts, tells how far into the chart pattern price dropped between the breakout and ultimate high. For downward breakouts, tells how far price climbed into the chart pattern between the breakout and ultimate low. See Figure G3 and *Stops*.

Table x.8 Performance and Failures Over Time for Bull Markets (Bear markets only appeared in the 2000s and are not included in the table or in the statistics.)

Description	Explanation
Decade	The performance of the chart pattern from breakout to ultimate high/low, sorted by the breakout date, by decade.
Performance (above), Failures (below)	
Decade	The breakeven failure rate sorted by the breakout date, by decade.

Table x.9 Busted Patterns

Description	Bull Market
Busted patterns count	A count of the number of busted patterns as a percentage of all chart patterns for the given type (such as a percentage of ascending triangles).
Single/double/triple+ bust count	A count and percentage of patterns that bust once, twice, and more than twice (triple+). See Figure G1 and *Busted pattern*.
Performance for all busted patterns	The average rise/decline for all types (single/double/triple+) of busted patterns.
Single busted performance	For patterns that bust only once, measured from the top/bottom of the pattern opposite the original breakout to the ultimate high/low. For example, a single busted double top measures the rise from the top of the pattern to the ultimate high.
Non-busted performance	The performance of similar patterns that do not bust.

Table x.10 Trading Tactics

Description	Bull Market
Percentage reaching 0.25 to 3 times height target	The percentage of time price meets or exceeds a target that is a multiple of the pattern's height usually added to the top or subtracted from the bottom of the pattern or breakout price.

Terminology

5% failure rate See *breakeven failure rate*.

Average The sum of scores divided by the number of scores.

Average rise or decline The rise measured from the breakout price to the ultimate high, or the decline measured from the breakout price to the ultimate low, for each stock, and then computing the average.

Bear market The decline in the Standard & Poor's 500 index from 24 March 2000 to 10 October 2002 and from 12 October 2007 to 6 March 2009.

Board The horizontal or flat portion of a diving board pattern, often lasting from weeks to months. It occurs before the plunge.

Breakeven failure rate A percentage of the patterns that fail to rise or decline more than 5% after the breakout. *Breakeven* assumes the 5% move will cover the cost of trading (slippage, fees, commissions, and so on).

Breakout When price *closes* outside a trendline boundary or above/below the pattern's high/low, a breakout occurs. What constitutes a breakout can vary from pattern type to pattern type.

Breakout gap, breakout day gap A gap that may occur on the breakout day. Usually it is a breakaway gap, one that shows high volume after leaving a consolidation area.

Breakout price The price at which a stock breaks out of a chart pattern. Performance measures involving the breakout price use the opening price the day after the breakout. If a trading order is used (like a buy stop), a trade will execute at the higher of the buy stop or opening price (for upward breakouts) or at the lower of the limit order or opening price (downward breakouts).

Breakout volume The volume on the breakout day. The breakout day's volume is compared to the average volume over the prior 30 days (not including the breakout day).

Bull market Every date outside of the bear markets as posted by the Standard & Poor's 500 index. See *bear market* for specific time periods.

Busted pattern Chart patterns that reach the ultimate high or low less than or equal to 10% away from the breakout price before reversing and closing beyond the side opposite the breakout.

> **Figure G1** shows an example. Price forms a triple top at ABC. It confirms as a valid chart pattern when the stock closes below the bottom of the chart pattern at D. Price bottoms the next day (having declined less than 10% below the breakout price) before reversing. Price climbs and closes above the top of the chart pattern, at E, busting the downward breakout. If price continues to rise more than 10% above A (the top of the chart pattern), the triple top becomes a single busted pattern.
>
> In this case, price did not rise more than 10% above A. Instead, the stock dropped and closed below the bottom of the chart pattern at F. This busted the chart pattern for the second time. If price continued down more than 10% below the bottom of the chart pattern, then the triple top would be classified as a double busted pattern.
>
> Instead, price dropped less than 10% and reversed again to close above the top of the chart pattern at G. This busted the chart pattern for the third time. The count of busts stopped at three, so this triple top is a triple+ busted pattern even though it has more than three busts.

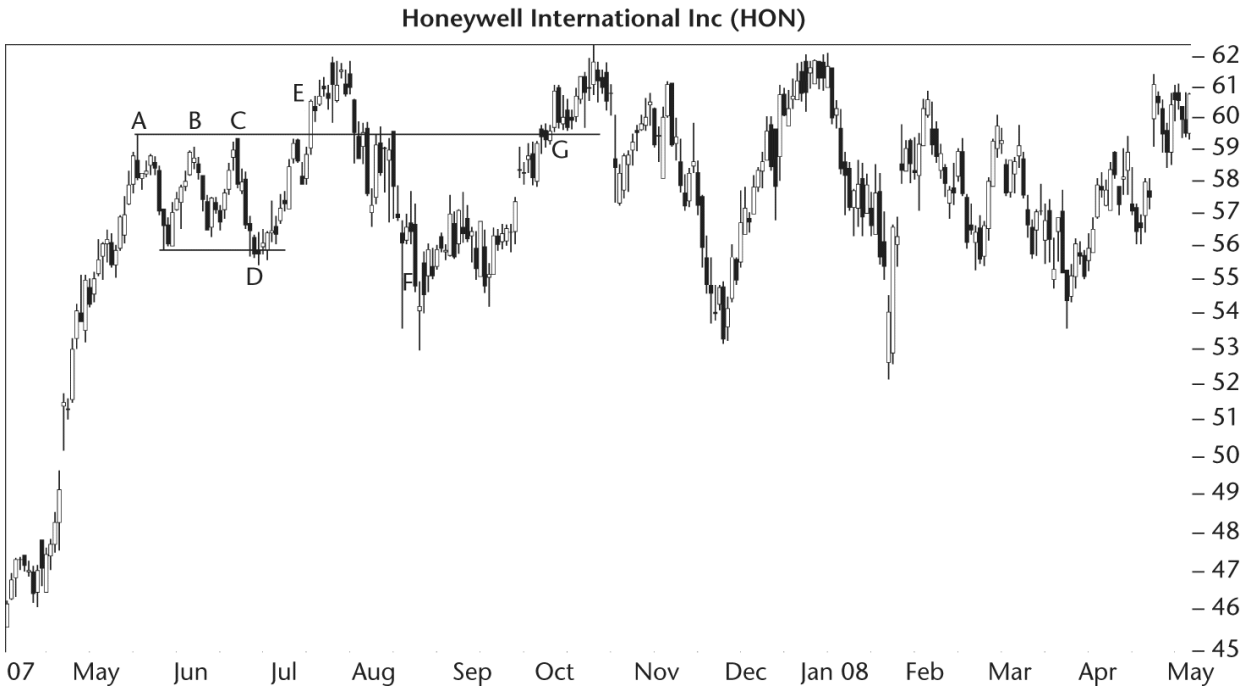


Figure G1 This triple top busts more than three times but is called a triple busted pattern.

Busted pattern performance After a pattern busts, the performance measures how far price moves in the new direction, from the top or bottom of the chart pattern to the ultimate high or low, respectively. See *Busted pattern* and Figure G1.

Closing the gap Price forms a gap but succeeding price movement spans the gap to cover it.

Confirmation point, price, or level A price or location that validates a chart pattern. Also known as the breakout point, price, or level.

Consolidation A sideways move or a region in which price switches from trending to moving sideways.

Contact If you would like to contact Mr. Bulkowski, e-mail him at tbul@hotmail.com or visit his website at http://ThePatternSite.com.

Continuation When price breaks out in the same direction as it entered a chart pattern. For example, if the prevailing price trend is upward into a chart pattern and exits out the top, the pattern acts as a continuation of the uptrend. Contrast with *reversal*.

Corrective phase Part of a measured move up or down, a region where price retraces a portion of the prior move.

Countertrend When price moves against the prevailing market trend. Downward breakouts in bull markets or upward breakouts in bear markets are countertrends.

Countertrend pattern A pattern with an upward breakout in bear markets or a downward breakout in bull markets; that is, the breakout direction is against the prevailing market trend.

Days to ultimate high or low The average time from the breakout date to the date of the ultimate high or low, measured in calendar days.

Double bust Price busts a chart pattern twice. See *Busted pattern* and Figure G1.

Dual bumps In a bump-and-run reversal, price bumps up (or down) and then returns to the trendline two or more times.

End (as in "pattern end") Usually the highest high or lowest low in a chart pattern. For example, the start and end of a double bottom is the lowest low in each valley.

Failure rate A count of how many patterns fail to see price rise or decline a selected amount (like 5%, 10% and so on).

Flagpole A strong vertical move, either up or down, where price has little or no overlap for several days. Associated with flags and pennants.

Flat base A consolidation region in which price touches, or comes near to, the same price level multiple times over several weeks or months. The bottom or top of this region may appear flat and sometimes forms the base of an impending up move, hence the name, "flat base."

Formation Synonym for chart pattern.

Frequency distribution A method to assign data to one of several non-overlapping intervals. A frequency distribution shows how often values occur. For example, if you empty your pockets and count the change, you may have three pennies and two nickels. That's a

frequency distribution, a count of how many pennies and how many nickels you have.

Gap A vertical space between two price bars on the chart. For upward price trends, a gap happens when today's low price is above yesterday's high. For downward price trends, a gap occurs when today's high price is below yesterday's low.

Gap performance A measure of how well a chart pattern performs with or without a gap. Computed using the opening price the day *after* a gap to the ultimate high or ultimate low.

Handle performance The rise (or decline) to the ultimate high (or low) from handles shorter or longer than the median handle length in a cup-with-handle pattern. The handle measures from the right cup lip to the breakout.

Handle retrace For inverted cup with handles, the rise from the right cup low to the handle high as a percentage of the cup height from the right lip to the highest high in the pattern.

Hard stop A stop-loss order placed with a broker for execution. Contrast with *Mental stop*.

Heavy left/right volume performance A comparison of volume surrounding peaks or valleys using 2 days before to 2 days after the peak or valley.

Hold time loss The maximum amount of money you might lose if you sold at the worst time during a trade.

Internal partial decline The same as a *partial decline* except the breakout fails to occur and the chart pattern continues developing. Look for two consecutive trendline touches that occur on the same side with a *minor low* between them (looking like a loop hanging below the trendline). The minor low should *not* come close to or touch the opposite trendline. An internal partial decline only occurs *after* the chart pattern is valid, meaning it complies with all identification guidelines. *See* **Figure G2**.

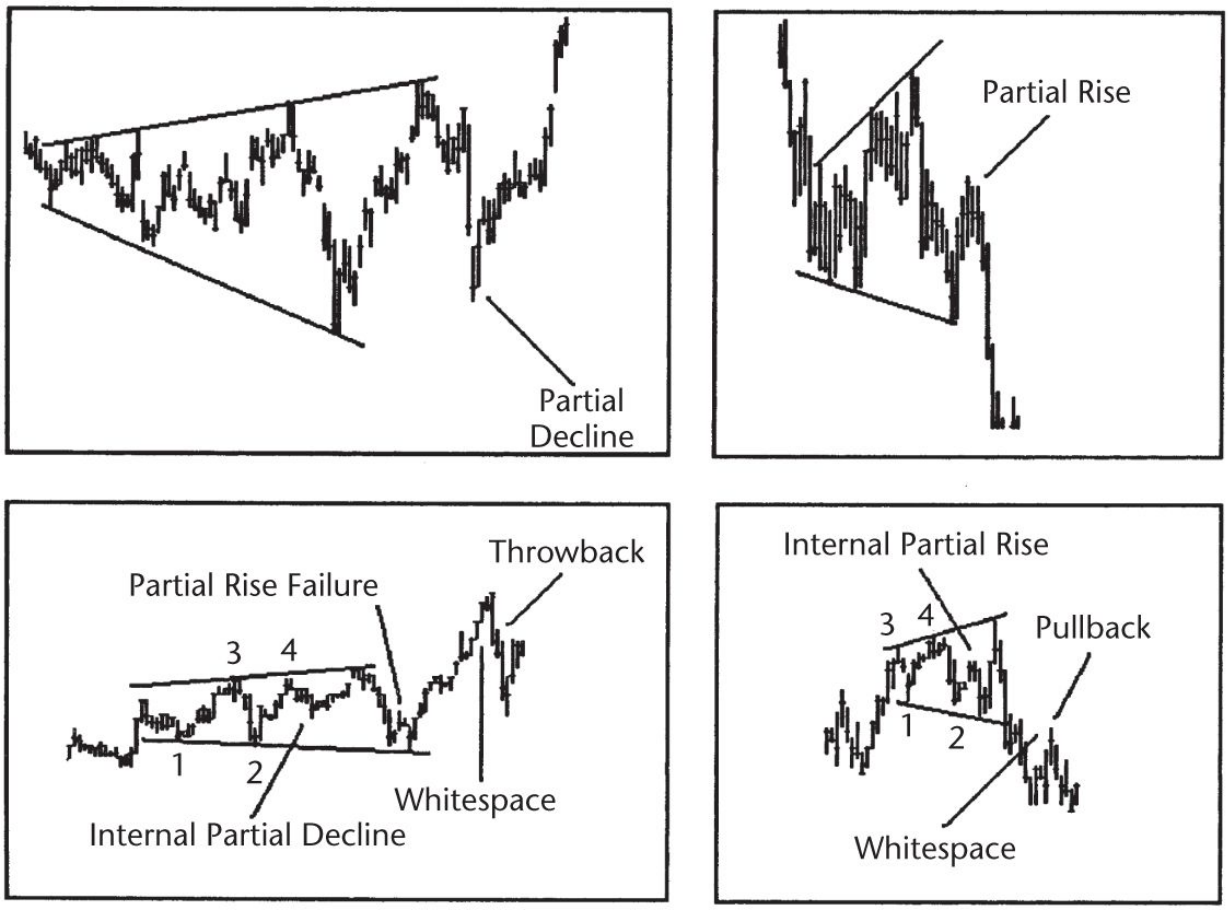


Figure G2 Clockwise from upper left: A partial decline and partial rise give advance notice of the breakout direction. An internal partial rise or decline wrongly predicts the breakout direction. Pullbacks and throwbacks occur after the breakout when the stock returns to the breakout price or trendline within 30 days and shows whitespace during the retrace. Minor lows are points 1 and 2; minor highs are points 3 and 4.

Internal partial rise Occurs *within* a chart pattern after price touches a lower trendline, rises, and then returns to the lower trendline without coming close to or touching the opposite trendline. A breakout does *not* follow. Look for two consecutive trendline touches to occur on the same side with a minor high between them (looking like a pimple on the trendline). An internal partial rise is the same as a *partial rise* (see that entry) except a breakout does not follow and the chart pattern continues developing. An internal partial rise only occurs *after* the chart pattern is valid, meaning it meets all identification guidelines. See Figure G2.

Knot A place in a trend where price moves horizontally for at least 3 days. When in an uptrend and located close to a downward breakout, a knot can act as support and cause a pullback. See Chapter 1, Figure 1.8.

Launch price The price at which a strong trend starts that leads to the beginning of a chart pattern. Often associated with diamonds, big M, and big W patterns. Price will sometimes bottom just above the launch price before reversing.

Lead-in height The height from the trendline to the highest high (or lowest low) in the first quarter of a bump-and-run reversal.

Limit order An order to a broker where you specify that you will buy for no more or sell for no less than a specific price.

Linear regression A method that fits a straight line to a series of numbers; the slope of the resulting line gives the trend. Used to find whether volume is trending upward or downward over the course of the chart pattern, from start to end, not to the breakout.

Maximum price rise or decline Used as the non-overlapping intervals for a frequency distribution of failure rates, this is an arbitrary list of benchmark values (such as 5%, 10%, 15%, and so on).

Measure rule Varies from pattern to pattern but is usually the pattern's height added to (upward breakouts) or subtracted from (downward breakouts) the breakout price. The result is the predicted price target. See “Percent meeting price target” in the Results Snapshot of each chapter for how often price hits their predicted targets. Also included in Table x.10.

Median The middle value in a sorted list of numbers such that half the values are below the median and half above. If no middle value exists, the average of the two closest values is used. For example, in the list 10, 15, 30, 41, and 52, the median is 30 because there are two values on either side of it.

Mental stop A stop-loss order kept in your head instead of being placed with a broker. Day traders, for example, may use a mental stop and sell when the time is right instead of letting a hard stop force an exit. Contrast with *Hard stop*.

Minor high A price peak usually separated from other peaks by at least 5 price bars. Points 3 and 4 in Figure G2 are minor highs.

Minor low A price valley usually separated from other valleys by at least 5 price bars. Points 1 and 2 in Figure G2 are minor lows.

Narrow pattern Measured from the chart pattern's start to end, this is the pattern's width, in calendar days. Patterns longer than the median length are wide; shorter than the median are narrow. See Table x.5.

Neckline A trendline joining the armpits of a head-and-shoulders pattern. A close below/above the neckline signals a breakout from the chart pattern.

Overshoot Price sometimes overshoots the top of the pattern within two weeks before entering a chart pattern. Overshoots are not included in the calculation of the trend start. **Figure G4** shows an example overshoot at F. Price forms a symmetrical triangle (E) and price rises into the chart pattern from the low at D. At F, price overshoots the start of the triangle, which could interfere with the determination of where the trend starts.

Partial decline After price touches a top trendline, price declines but does not touch (or come that close to) a lower trendline before forming a distinct minor low and usually staging an immediate upward breakout. Partial declines must begin before the actual breakout and form after a valid chart pattern appears (after the chart pattern meets all identification guidelines). See Figure G2.

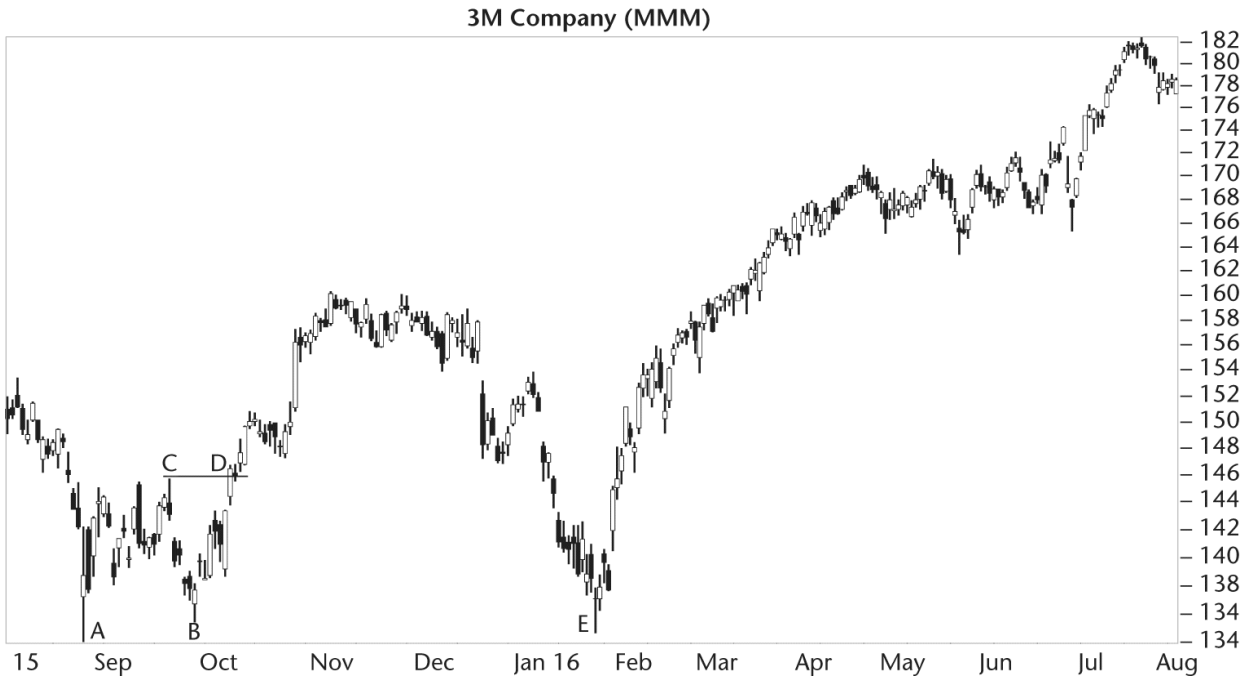


Figure G3 How stop-loss orders are triggered as price rises to the ultimate high.

Partial decline failure A partial decline that occurs but the breakout does not follow immediately or is in the wrong direction.

Partial rise After price touches a lower trendline, price rises but does not touch (or come that close to) the upper trendline before forming a distinct minor high and usually staging an immediate downward breakout. The partial rise must begin before the breakout and form near the end of a valid chart pattern (after the pattern meets all identification guidelines). See Figure G2.

Partial rise failure A partial rise occurs but the breakout does not follow immediately or is in the wrong direction. See Figure G2.

Percentage meeting price target Tells how often price meets or exceeds the price target found using the full height of the chart pattern in the measure rule.

Performance rank A ranking of the average rise or decline for each chart pattern, sorted by breakout direction and market condition (bull/bear) where a rank of 1 is the highest performance.

Plunge A steep drop in a stock as part of a diving board pattern, measured from the end of the board to the subsequent low. Often

lasting from several weeks to months. Recovery is often V-shaped.

Position trader A trader who holds a position for days, weeks, or longer, following a longer term trend. Contrast with *Swing trader*.

Premature breakout When price moves or closes outside the pattern's trendline boundary but quickly returns. A premature breakout cannot be distinguished from a valid breakout when it occurs. The second and succeeding editions of this book assume a premature breakout is the actual breakout when computing statistics.

Pullback A retrace after a downward breakout. Price returns to, or comes very close to, the breakout price or trendline within 30 days after the breakout. Whitespace must appear between the hooking price action of the pullback and the breakout price. This rule prevents the pullback term being applied to price clustering near the breakout price. See Figure G2.

Reversal The movement of price when it enters and exits the chart pattern from the same side. Price reverses the prevailing price trend from up to down or down to up. Contrast with *Continuation*.

Single bust A chart pattern that fails to see price move more than 10% in the breakout direction before reversing and closing above/below the end opposite the breakout direction and then moving more than 10% away. See *Busted pattern* and Figure G1.

Standard & Poor's 500 change The change in the S&P 500 index using the dates of the chart pattern breakout and ultimate high or low.

Stop-loss order. A trading order to buy at a price above (buy stop) or sell at a price below (stop loss) the current market price.

Stops (How often stops hit, Table x.7). Short for stop-loss order. To understand how often a stop is hit, look at the double bottom in **Figure G3**. A double bottom chart pattern appears at AB, with the top of the pattern at C. When price closes above C (which happens at D), the double bottom confirms as a valid double bottom. My computer finds the lowest low on the way to the ultimate high in relation to the chart pattern. In this example, the ultimate high isn't shown because it's off the scale. On the way to the ultimate high, the stock drops to E.

A stop placed at the top or middle of the chart pattern would be hit. However, a stop placed at the price of the low at A (the lower of the two bottoms), would not trigger because E didn't drop down to the price of A.

I checked each chart pattern and counted how often price dropped into the chart pattern on the way to the ultimate high, like that shown. In a similar manner, I counted the number of times price climbed into the chart pattern on the way to the ultimate low (that is, for downward breakouts).

Stop placement using this method could not be used for patterns like rising and falling wedges because the breakout is not at the top or bottom of the pattern.

Swing trader A trader who tries to profit by trading the move from peak to valley, or valley to peak. Usually holds positions for day(s) and weeks, but usually not for several months or years.

Tall or short patterns A ratio expressed as a percentage of the formation height and breakout price. The median value separates the difference between short (values below or equal to the median) and tall (values above the median) and appears in Table x.5.

Term—short, intermediate, or long A short-term trend lasts up to 3 months. Intermediate-term trends last between 3 and 6 months. Long-term trends last more than 6 months.

Throwback A retrace after an upward breakout. Price declines to, or comes very close to, the breakout price or the pattern's trendline within 30 days after an upward breakout. Whitespace must appear between the hooking price action of the throwback and the breakout price. See Figure G2.

Trend high Used for flags, pennants, and perhaps other chart patterns, the minor high that begins or ends a straight-line price run. Similar to the ultimate high except it marks the start or end of a very short-term price trend, not a 20% price change.

Trend low Used for flags, pennants, and perhaps other chart patterns, the minor low that begins or ends a straight-line price run. Similar to the ultimate low except it marks the start or end of a very short-term price trend, not a 20% price change.

Trend start The price were a trend begins leading to the start of a chart pattern. To find the trend start, begin at the start of a chart pattern and move backward in time. If price *climbs* leading away from the chart pattern, find the highest high before price closes 20% or more below and before the highest high. When this occurs, the highest high marks the trend start. If price drops leading away from the chart pattern (working backward in time), find the lowest low before price closes 20% or more above and before the lowest low. When that occurs, the lowest low marks the trend start. Price overshoots and undershoots within two weeks of the chart pattern start are ignored.

Triple+ bust Price busts the chart pattern three or more times. See *Busted pattern* and Figure G1.

Ultimate high The highest high before price declines by 20% or more, measured from the highest high to the *close* or a close below the chart pattern's low. If the stock had not completed a 20% decline before end of data, then use the highest high to that point. The Introduction explains how to find the ultimate high.

Ultimate low The lowest low before price rises by 20% or more, measured from the lowest low to the *close*, or a close above the chart pattern's high. If the stock had not completed a 20% rise before end of data, then use the lowest low to that point. The Introduction explains how to find the ultimate low.

Undershoot Within 2 weeks before the start of a chart pattern, price plunges below the bottom of the chart pattern and quickly recovers. **Figure G4** shows an example of undershoot at B. Price drops from peak C and forms a descending triangle (A). Along the way down, price undershoots the start of the chart pattern at B, which could interfere with the determination of where the trend starts.

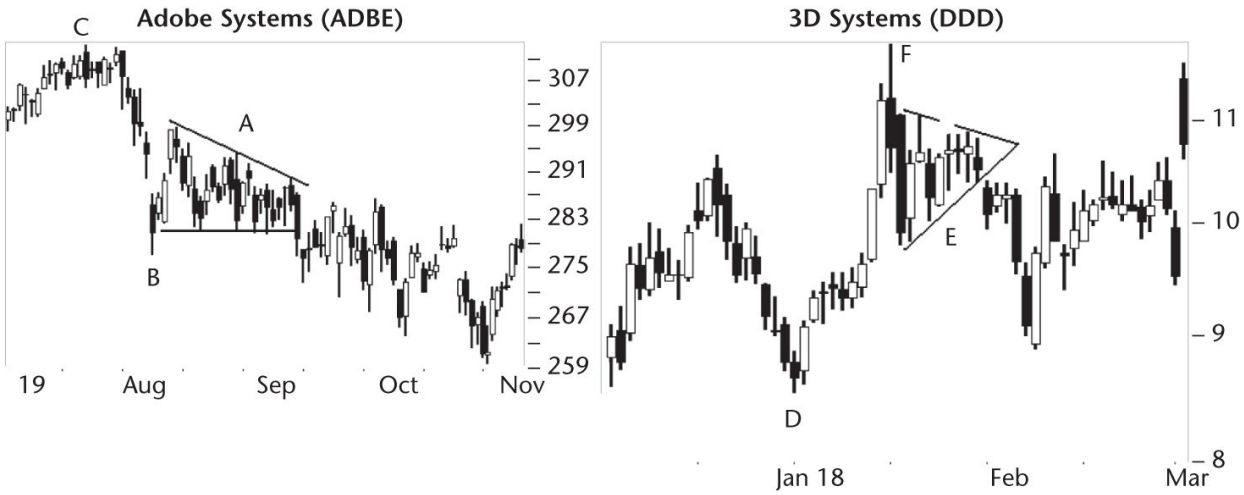


Figure G4 Undershoot (B) and overshoot (F) appear near the start of two chart patterns. Undershoot and overshoot are not included in the determination of where the trend starts.

Volatility stop A stop-loss order whose placement is determined by how volatile a stock is. Compute the high–low price range for each day for the most recent 22 days (the approximate number of trading days in a month). Take the average of those values and multiply by two. Subtract the result from the current *low* price to get the stop-loss value for a long-side trade. For short sales, add the result to the current *high* price to get the stop-loss value.

> **Table** G1 shows the calculation for 3M stock. The High column shows the high price for the day, and the Low column shows the low price for the day. The Difference column shows the difference between the two columns. At the bottom of the table, I averaged the Difference column and found it was 3.65. Multiply this by two (7.30) and subtract it from the low price (153.92) to get the volatility stop location for a bullish trade (146.62). For a short sale, add 7.30 to the most recent high price (159.32) to get the stop location of 166.53.

Table G1 Volatility Stop Calculation

High	Low	Difference
157.42	151.73	5.69
159.62	150.49	9.13
163.38	156.89	6.49
160.87	158.97	1.90
159.83	157.59	2.24
162.09	156.47	5.62
157.42	155.48	1.94
158.67	156.24	2.43
156.73	151.71	5.02
155.05	150.10	4.95
154.78	151.53	3.25
156.52	153.48	3.04
156.71	154.05	2.66
157.80	155.31	2.49
158.88	156.46	2.42
159.96	157.05	2.91
157.10	154.69	2.41
155.60	153.87	1.73
154.72	151.04	3.68
153.25	150.99	2.26
156.93	154.16	2.77
159.23	153.92	5.31
Average:		3.65
2× volatility:		7.30
Stop-loss location:		146.62

Volume trend The slope of a line found using linear regression on volume data determines the volume trend. A rising volume trend

means volume increases over time; a falling volume trend is one that recedes over time.

Website Bulkowski's website is at http://ThePatternSite.com.

Wide pattern Measured from the date of the chart pattern's start to its end, in calendar days. Patterns wider than the median width are wide ones; shorter than the median are narrow ones.

Yearly position Where the breakout occurs in the yearly high–low price range. To determine the yearly price range, start from the day before the breakout and find the highest high and lowest low over the prior 12 months. Divide the range into thirds and compare the current breakout price to one of those thirds to determine its position (highest third, middle third, or lowest third) in the yearly price range.

Yearly position, performance The yearly position for each chart pattern's breakout price is determined and its performance is placed in one of three bins (those within a third of the yearly high, middle, or low). Average the results in each bin. The result is the performance of chart patterns based on their yearly high–low position.

Visual Index of Chart Patterns

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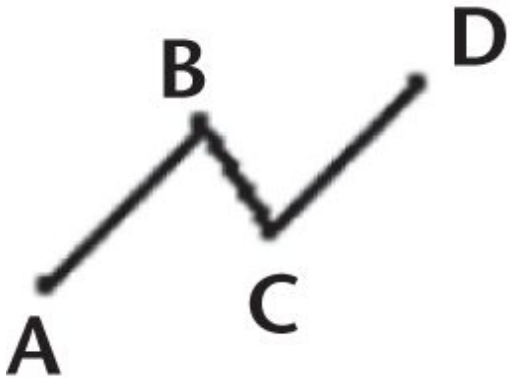

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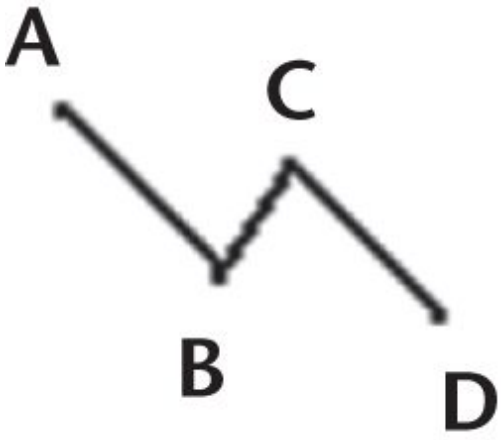

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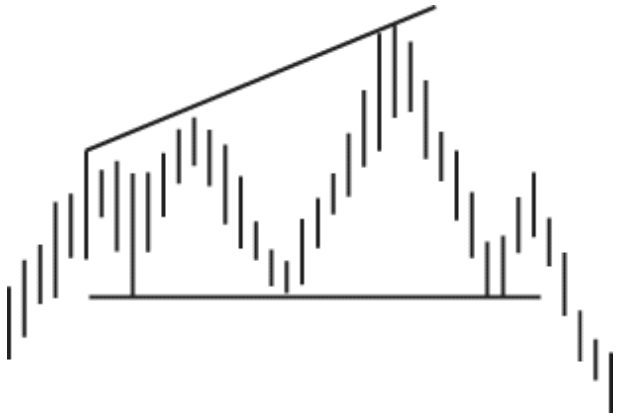

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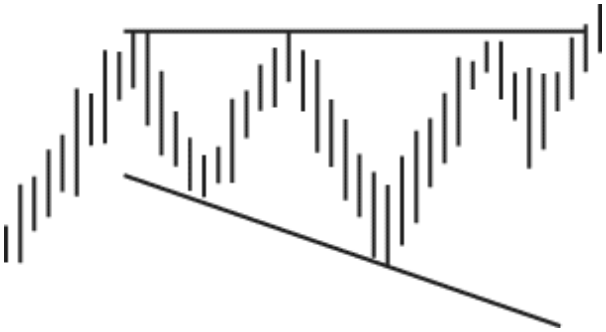

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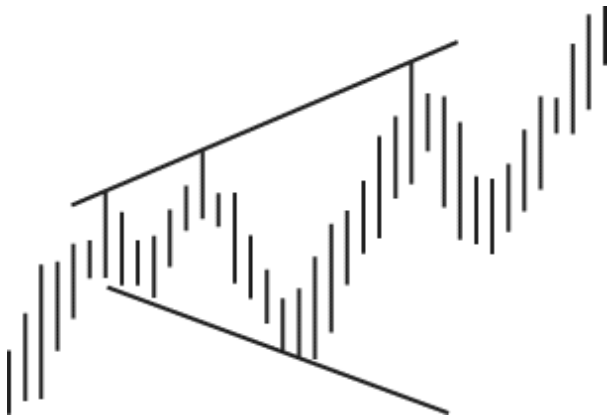

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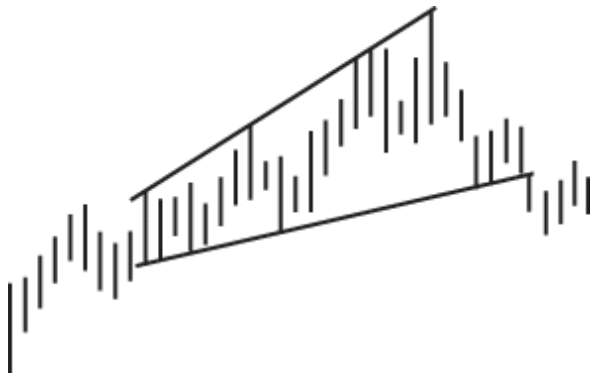

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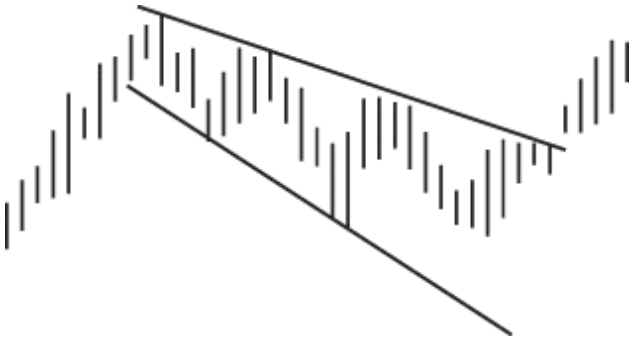

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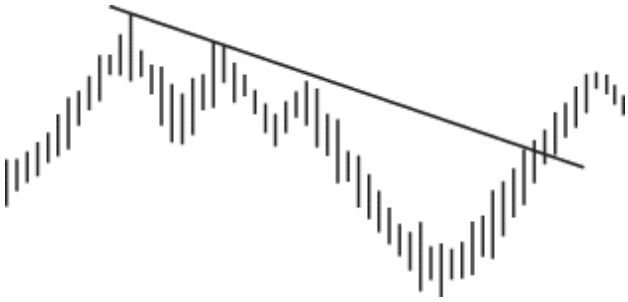

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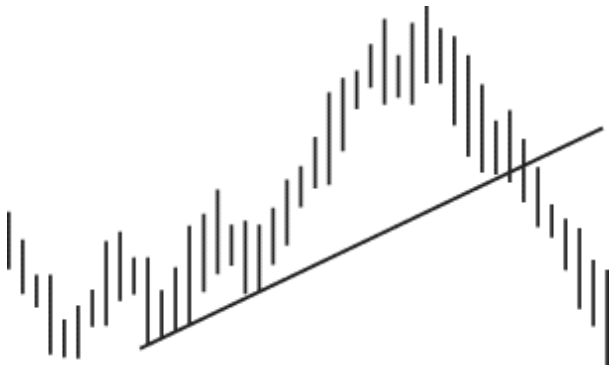

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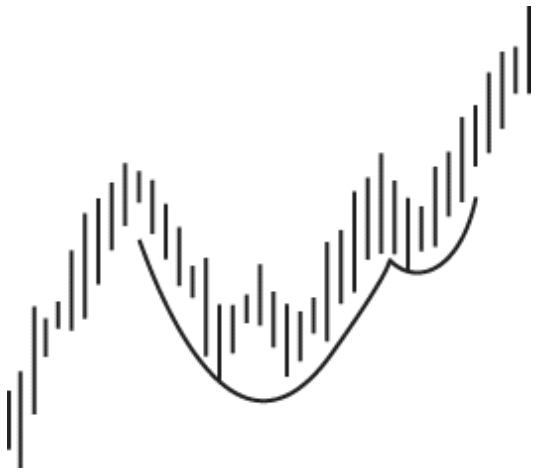

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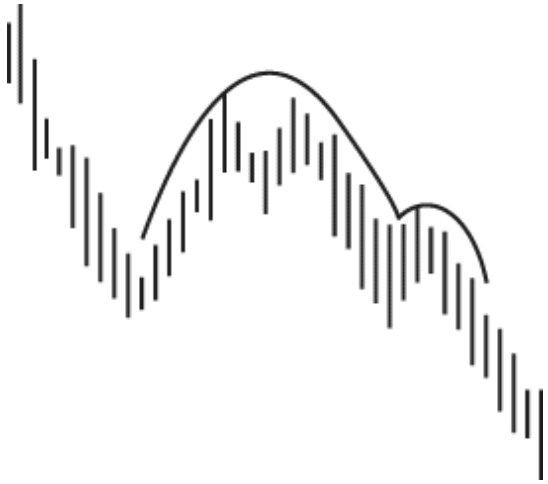

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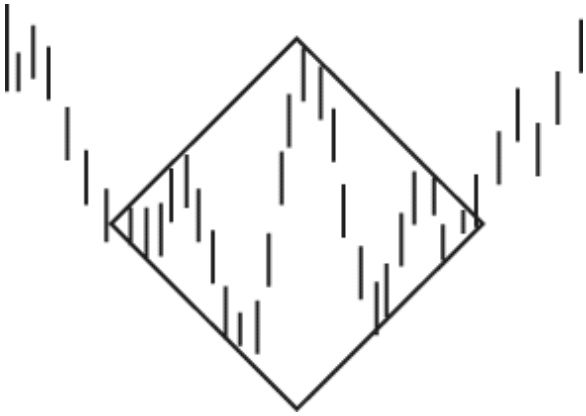

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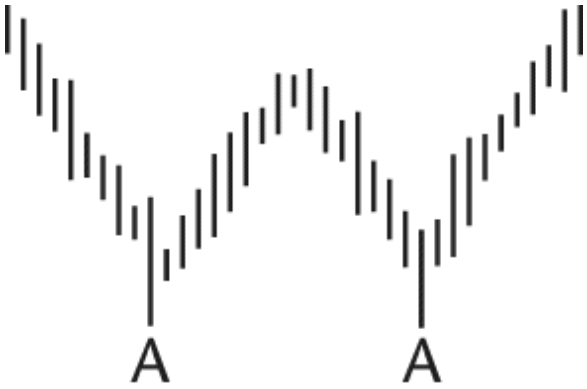

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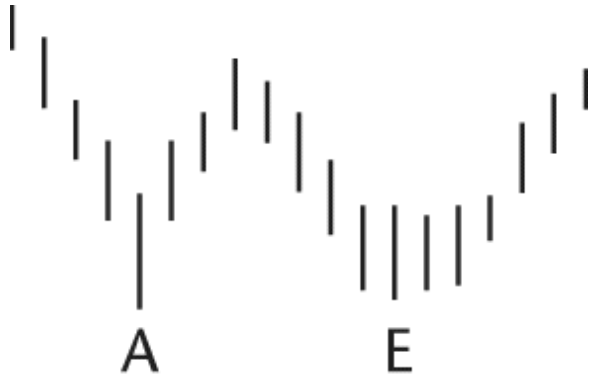

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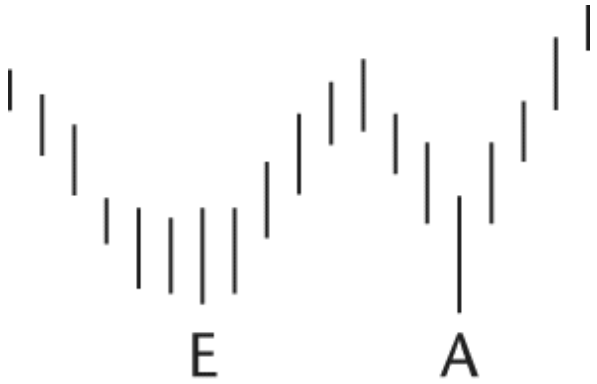

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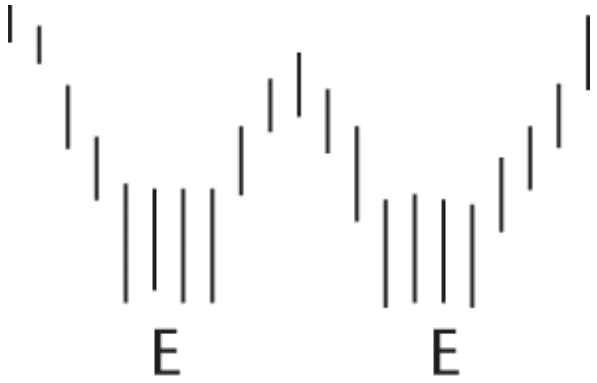

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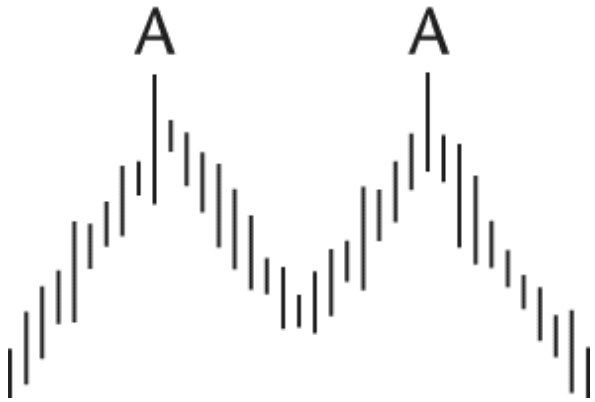

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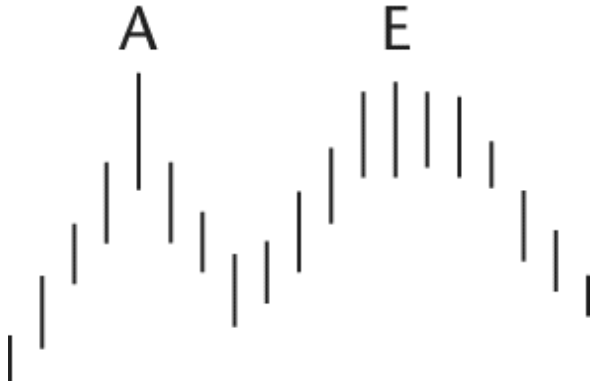

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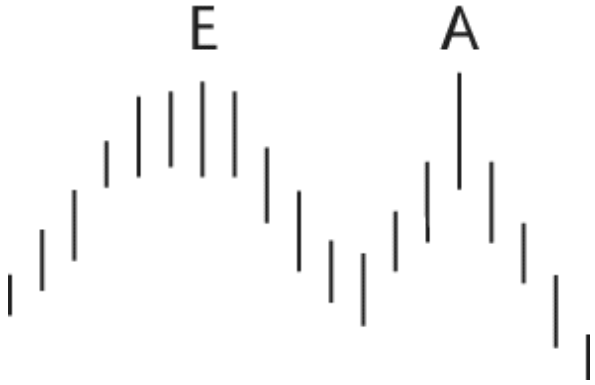

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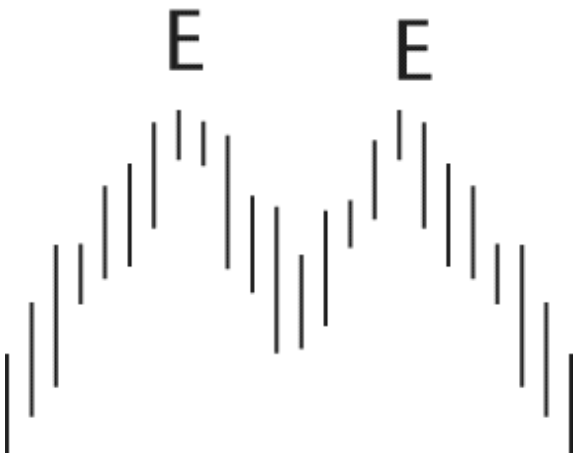

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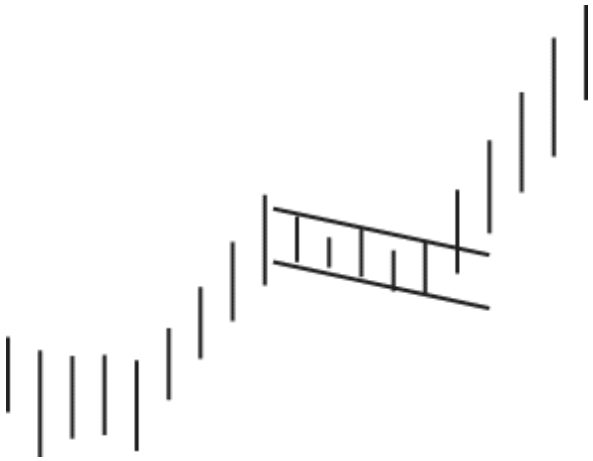

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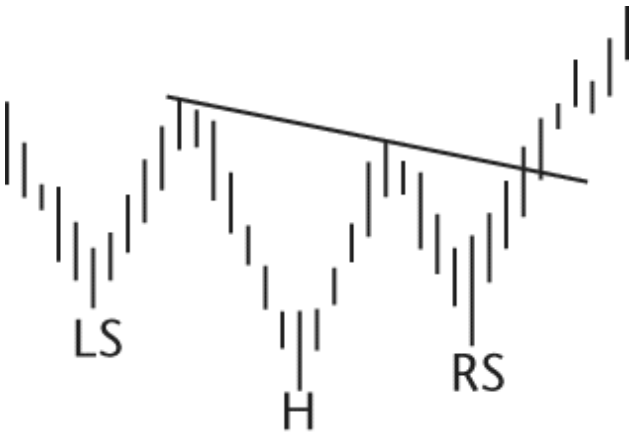

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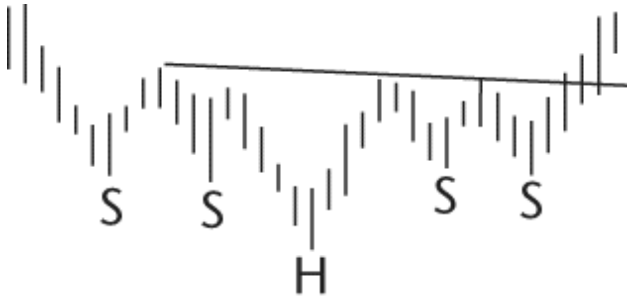

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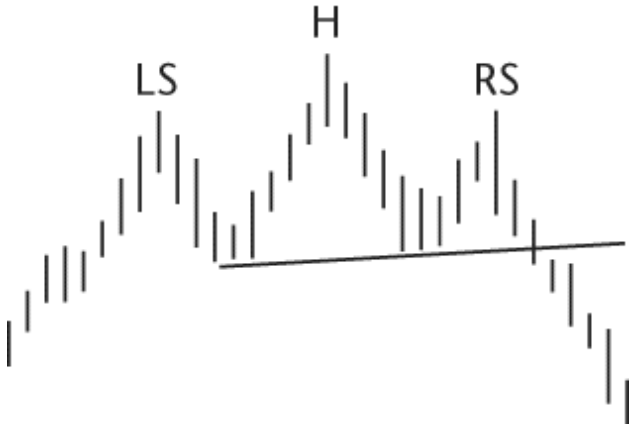

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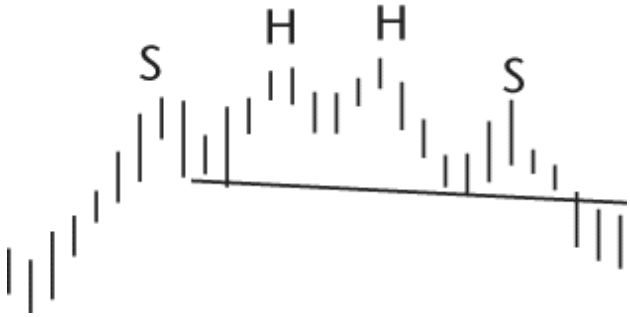

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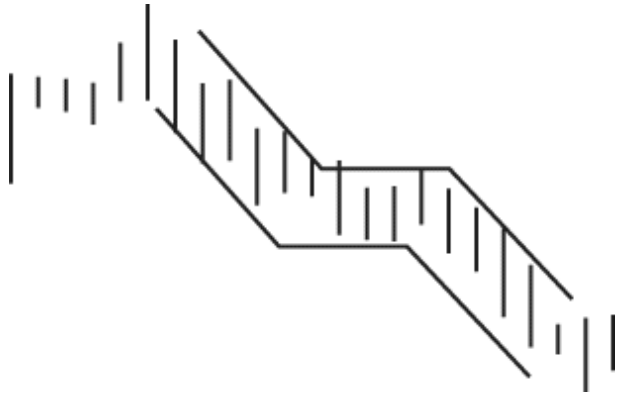

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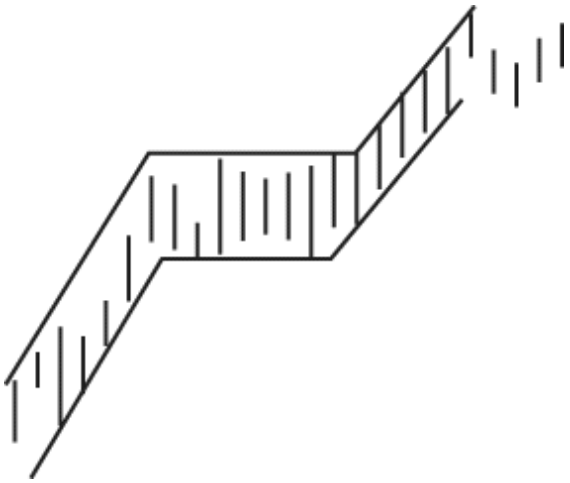

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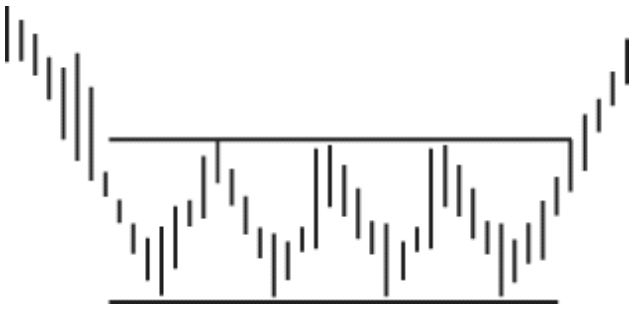

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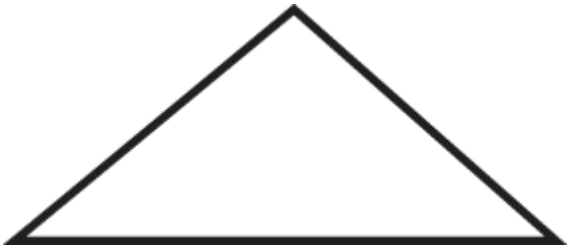

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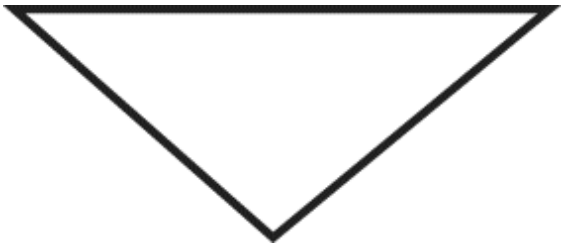

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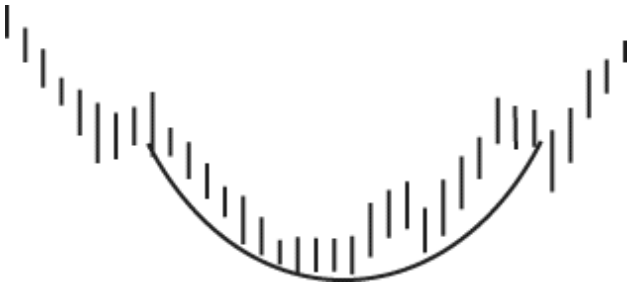

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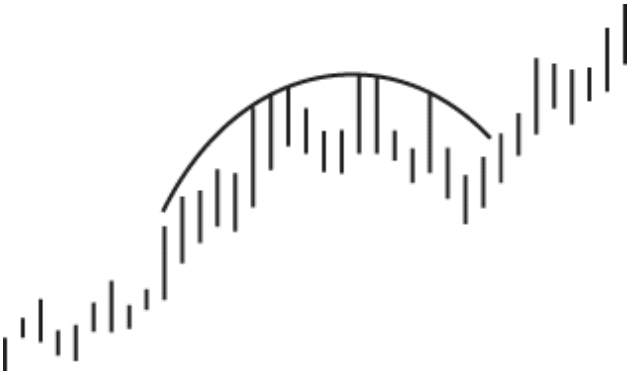

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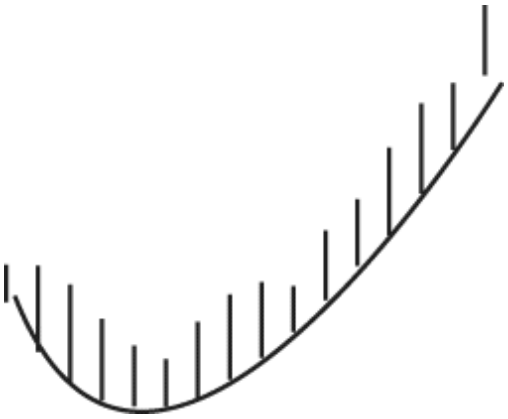

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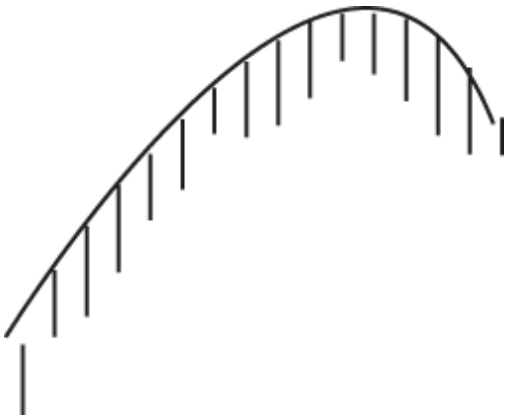

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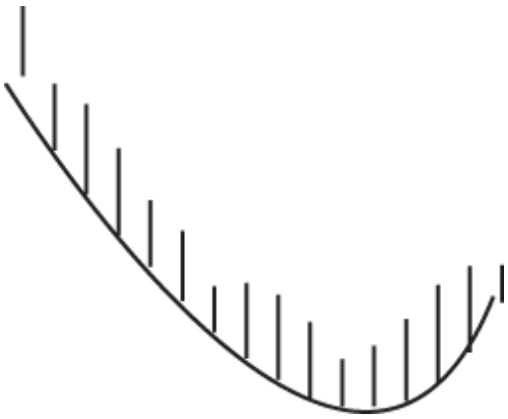

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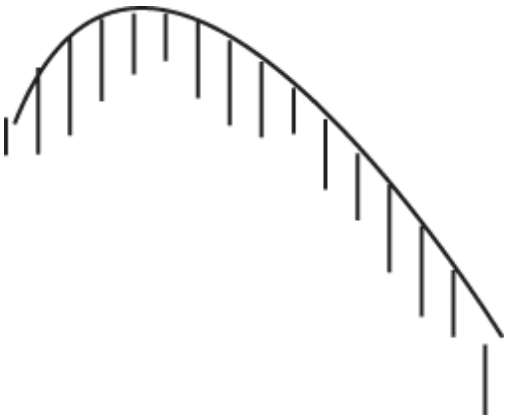

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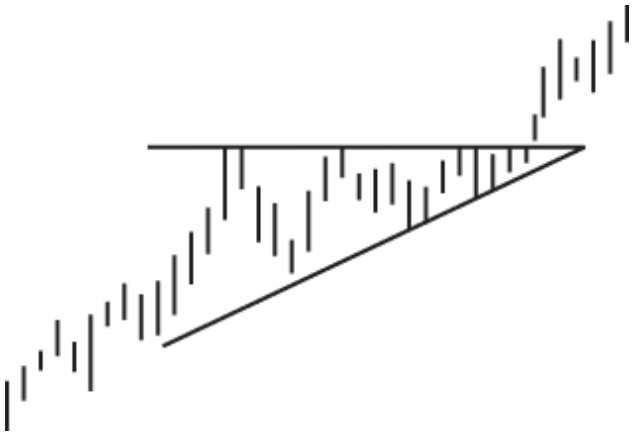

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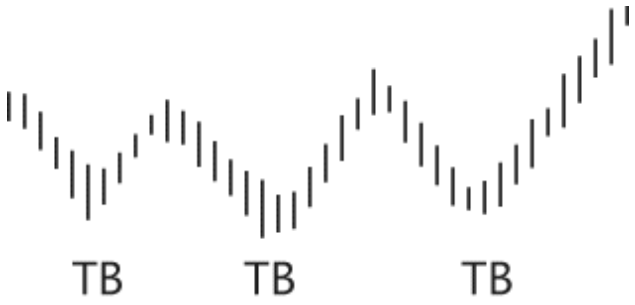

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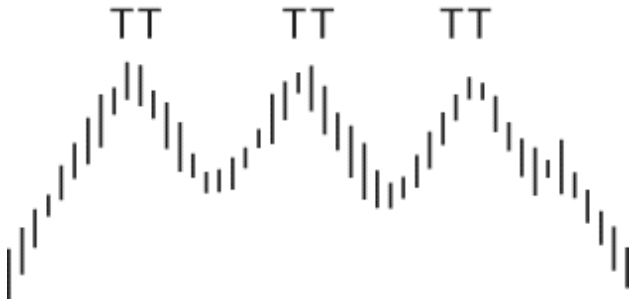

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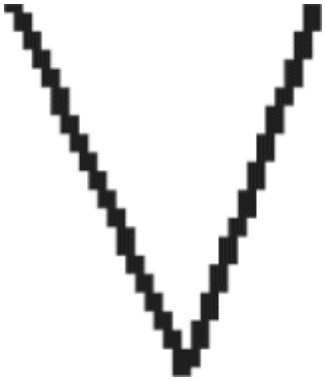

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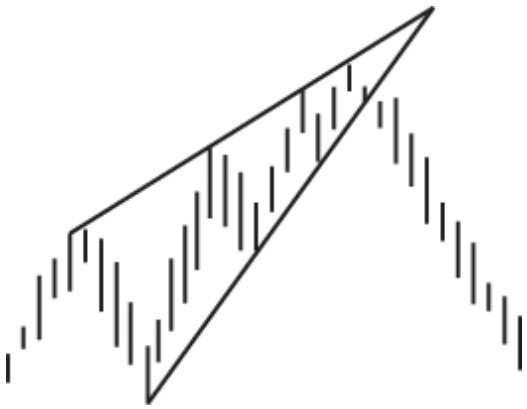

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